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Equipment Orders in July

INDICATIONS are that 1927 as an equipment building year will prove similar to 1926, although somewhat better. Graphs showing the trends of the two years for the period to date would not differ greatly. The line would be at a high point near the first of the year, decline somewhat after that, and then rise at the five or six-months' point, only to drop sharply in summer as it has for several years. In previous issues of the *Railway Age* this year, the possibilities of 1927 as an equipment building year were found to promise something better than last year, on the basis of orders placed. Even in July's inactivity, there is evidence that 1927 may be a better year than 1926. Every class of equipment showed orders, few as they were, ahead of July, 1926. There were 26 locomotives ordered as against 14 in July last year; there were 1,459 freight cars against 1,256 last year, and 69 passenger cars as compared to 68 in July, 1926.

Standardized Electric Traction

DIFFERENT schools of opinion have been largely responsible for retarding electric traction development in the United States. Unfortunately, too, these schools include nearly as many engineers among the railroad personnel as those representing manufacturers. In at least one case, a project after being launched was cancelled because of disagreement on the type of system to be used, and it is not surprising that the differences of opinion among the technicians cause railroad managements some reluctance in committing themselves to the additional expenditures required. Recently several new factors have been introduced in the field, such as the motor-generator type electric locomotive, the Diesel-electric locomotive, the mercury-arc rectifier, the automatic substation, etc. These can be used to further fog the issue or to clarify it. The last report of the committee on electric rolling stock of the Mechanical Division of the American Railway Association strongly emphasized the value of electrification when properly used. Certainly the railroads should be in a position to use this tool to the greatest possible advantage. It remains with a relatively few engineers capable of unbiased judgment to determine the field for each type of machine and to compile quantitative data which can be used to select the facility best suited to meet certain requirements. Furthermore, this work should be given direction. Present conditions may not warrant any kind of standardization, but until there is such a tendency, the advocates of heavy electric traction will probably have to content themselves with slow progress. With the joint use of terminal and other facilities by one or more railroads, a practice common in this country, the necessity is obvious of adopting a standard system of power distribution over which all types of electric motive power

will operate. A proper collection and correlation of data now available would go far toward solving this problem. The standard system adopted, of course, should be flexible enough to take care of all kinds of service met in railroad operation from single car multiple-unit operation to heavy tonnage freight trains.

Bus Line Mergers Continue

THE movement toward bus line mergers, noticeable for the first time only a few months ago, is continuing with increased vigor. The tendency toward consolidation is plain not only in the corporate union of bus lines but also in their establishment of facilities to be used jointly. Scarcely a day passes when some report of one bus line buying another does not come in, and plans for union bus terminals in New York, Chicago, Providence, R. I., and other places are being hurried to completion. Another point worth careful consideration is the fact that bus line consolidations are now being engineered in a number of instances by interests with large financial resources. As two outstanding examples, there are the buying up of bus lines in the east by some of the Vanderbilt interests, and in the west, by the Insull interests. Furthermore, a number of bus line engineering and management companies have been organized with the intention of controlling and operating bus lines on a large scale in the same manner that many other public utilities are managed. The business of motor bus transportation is becoming less and less the disorganized, financially weak enterprise that it once was. The importance, even the urgency, of careful consideration of the effect on themselves of these changes in the field of motor transport will not be lost on the railways.

What Is a Foreman?

MANY industrial organizations and some departments of a number of railroads have given special attention in more recent years to the question of foreman training. State university extension departments, vocational educational bureaus, correspondence schools and other organizations have prepared special courses on supervision for the use of officers and foremen. A reading of the proceedings of a recent conference on the topic of the foreman as a manager leads one to infer that the exact status of the foreman is not very clearly defined in many organizations. For instance, one speaker referred to the foreman as the connecting link between the management and the men; another designated him as a part of the management, not simply a labor boss or mouthpiece of management; a third pictured him as a dual personality representing the management to the workers on the one hand and the

workers to the management on the other; still another speaker stated that the foreman was nothing more than a figurehead, having little or no opportunity to exercise initiative or authority to go ahead on his own responsibility. Will not a long forward step be taken when the status of the foreman is more clearly understood and defined? Undoubtedly the many efforts that have been made in the railroad field to raise the standards of supervision by helping the foreman better to understand the art of leading the workers has done much to clear away some of this haze and put these men on a more dignified basis. Is there not much room for further progress, however, and does not a more thorough study of the whole problem of the functions, responsibilities and opportunities of the foreman give promise of abundant results?

Santa Fe Train Control an Operating Advantage

CAB signaling, either-direction operation on both tracks, the elimination of intermediate wayside signals, and the direction of train movements by signal indication without written train orders, are four interesting features of the three-speed continuous train control installation on 175 miles of double track on the Atchison, Topeka & Santa Fe between Ft. Madison, Iowa and Pequot, Ill. The benefits to train operation and the good performance of the equipment, as explained in an article elsewhere in this issue, show that the Santa Fe, by industrious application to the problem, has accepted the "lemon," as the train control orders of the Interstate Commerce were at first generally considered, and converted it into an economic operating advantage. Train control deserves only part of the credit in this case, however, for the Santa Fe introduced other changes to permit the cab signaling to be used to greater benefit. Facing point crossovers, mechanically interlocked, facilitate crossover and run-around train movements that keep trains moving on the main line with rare necessity for losing time waiting on a siding. The use of signals to direct these movements without train stops or lost time to pick up written orders is another important advantage. This installation, therefore, seems to be a modern ideal for a busy double-track railroad.

Stock Market Leaders

THE closing price of Atchison, Topeka & Santa Fe stock on Monday of the present week was 199 or 19 points higher than on July 5. Atlantic Coast Line common with a Monday closing price of 203½ was 12 points higher. Baltimore & Ohio common at 122 had increased 7 points. Canadian Pacific at 193¼ had increased 15¾ points. Erie common at 63½ had increased over 10 points. New York Central at 157½ had increased 9 points. Union Pacific at 190 had increased 16, while Great Northern at 99⅛ had increased 9¼ and Northern Pacific at 95½ had increased 7⅞. The list of railroad stocks that have shown such spectacular increases is not complete but it is noteworthy that all of the stocks mentioned, with the single exception of Erie, are among the established securities and that the increases have been in such stocks and not in those affected by merger rumors. The situation is all the more remarkable because the June earnings now being reported have quite generally shown decreases from last year, a

fact which the financial writers have not failed to "play up." The reasons for the increasing value of the more established railroad stocks are apparently several in number. One is decreasing interest rates. Another is promising crop prospects. A third is further realization of the restored prosperity of the railroad industry as shown by the current earnings per share, if not by the return on the property investment. The *Railway Age* average price of 20 leading railroad stocks has been climbing steadily not only since 1921 but since January, 1927. The figure for the first week in January, 1927, was 102.23. It increased progressively to 114.96 the first week in June. For the first week in July it still remained at 114.10 but the average reported in last week's *Railway Age* was 117.94 and the average for the current week, on the basis of Tuesday's closing prices, is no less than 121.26. Thus have the railroad stocks become stock market leaders. The particularly satisfying feature is that the present position of the average is not due to merger or like speculative prospects. The fact that the increases in price are in the standard railroad stocks would indicate that conservative investors appreciate the value that exists in such stocks as high grade investments.

New Record of Freight Train Speed

IN May, 1927, as is disclosed by statistics of the Interstate Commerce Commission just issued, the average freight train made a new high record by traveling 12½ miles per hour. In consequence, the number of gross ton-miles of service produced by the average train hourly was greater than ever before, being 22,461. To move the average freight train 12½ miles in each hour may not seem to those uninitiated in railway affairs an important thing to do, but it was, in fact, an achievement resulting from large expenditures of capital and years of effort. In order to illustrate how large an improvement in railway efficiency it represented, comparison may be made with the figures for May, 1920, just after the railways were returned to private operation. In that month the average train, including its load, weighed 1,470 tons and moved 10.8 miles an hour, and average gross ton-miles per train hour were 15,876. In May, 1927, the average train with its load weighed 1,797 tons, and moved 12.5 miles per hour, the result being that gross ton-miles per train hour averaged, as already indicated, 22,461, an increase over May, 1920, of 41 per cent. It was the combination of a substantial increase in the average load per train with a substantial increase in the average miles each train traveled, of course, which produced this increase in efficiency of 41 per cent per train. In May, 1920, the average train contained 37.1 cars, and in May, 1927, it included 47.1 cars. Needless to say, it requires better locomotives and improved facilities of many other kinds to increase the number of freight cars hauled in the average train by ten and at the same time increase by almost 16 per cent the average speed at which trains are hauled, which has been done during the last seven years. Increases in the speed of freight trains have occurred throughout the country. In New England the increase was from 10.2 miles in May, 1920, to 12.7 in May, 1927; in the Great Lakes Region, from 10.2 to 12.7; in the Central East, from 9.7 to 11.1; in the Pocahontas Region, from 10 to 12.1; in the Southeast, from 11.6 to 13.2; in the Northwest, from 10.5 to 12.5; in the Central West, from 12.2 to 13.2; and in the Southwest, from 11.1 to 13.

The Trainmaster's Job

IN years past trainmasters were usually recruited from the ranks of chief dispatchers, conductors and engineers. As such, they were, of course, more or less familiar with the division on which they served. Once they become trainmasters, however, the general tendency was to confine them closely to their own districts. The natural result was that most trainmasters were lacking in knowledge of what was transpiring on other railways, on their own railway, or even on their own division. This was hardly conducive to producing good executive timber. More pertinent, it did not produce good trainmasters in many instances. They continued to run their districts as they had been run in the past, with few opportunities or inducements to broaden their horizon. Increased operating efficiency has increased the responsibilities and problems of the trainmaster to such an extent that he cannot now handle the job with old methods. It is noticeable that, on most railways, the trainmaster is no longer kept tied down to his own particular district. Various methods are used to increase his usefulness. Some roads hold periodical system operating meetings, where the problems of the railways as a whole are discussed, and ideas exchanged; practically all roads hold divisional staff meetings where the superintendent passes on to the trainmasters new ideas he has obtained. On one road, at least, an annual tour of the line by all trainmasters is arranged so that they may know what other men are doing, and there is a noticeable increase in the number of trainmasters attending conventions where valuable ideas may be obtained. All of these methods aid the trainmaster and aid the railway as well. No method whereby trainmasters may be acquainted with the latest developments in methods tending toward greater operating efficiency should be overlooked.

Shop Cleanliness Pays

IN one important respect, improvement is possible in practically all railroad shops and engine terminals; that is the degree to which materials and tools are picked up and cleanliness and order prevail. The advantages of care in this detail of operation are almost too numerous to mention; they result in actual savings in money sufficient to justify the attention of the highest executive officers. It is a notorious fact that the average shop man tends to accumulate every kind of material and every tool for which he has or thinks he may have a use. Recognizing this trait, an energetic clean-up campaign was recently inaugurated in one of the largest railroad shops of the country. Bench drawers were opened and unused materials and tools removed; the floor was swept under benches; dark places were cleared of rubbish; every corner and crevice was dug out; wooden lockers and benches were largely replaced by steel, and arrangements were made to keep practically all material off the floors by the provision of suitable steel racks. As a result of this campaign, over a carload of unused bolts, nuts, washers, brass castings, bar stock and miscellaneous locomotive parts, was returned to the storeroom. Almost enough unused chisels, hammers, monkey wrenches and small tools were returned to the tool room to equip a small shop, and a large quantity of other material was loaded on cars and sent to the scrap dock. The cost of an initial cleanup at a shop or engine terminal is appreciable, but it is not expensive to keep these facilities cleaned up with the proper subsequent supervision. The

savings in material, the improvement in shop operation, the increase in safety, the decrease in the fire hazard and the improvement in the morale of the shop forces need no elaboration. The president or any member of his staff can determine for himself by even a limited inspection what the general shop conditions are as regards cleanliness, and the display of interest in and appreciation by him of attempts to secure orderly operation will not only encourage, but stimulate local shop managements.

Better Track

THE railways are now engaged in a program of track betterment work which is of record-breaking volume and of far reaching importance in its contribution to the improvement in transportation performance. The magnitude of this program is indicated by the capital expenditures for rails, since only the additional weight of rails is charged to this account, the cost of renewing rails in kind being charged to operation. *Capital expenditures* for heavier rails have increased from \$27,865,942 in 1923 to \$32,951,877 in 1925 and to \$42,184,000 in 1926. In other words, the expenditures on this account have increased more than 51 per cent in three years, while in the first three months of 1927 they were 15 per cent greater than in the corresponding period in 1926. The 90-lb. rail, long standard on many roads, is rapidly giving way to 110-lb., while rails approximating the 130-lb. section, until recently confined to two or three eastern roads of very dense traffic, are becoming common over the country. In other words, we are now passing rapidly through a cycle of increased weight of rails.

The placing of heavy rail is being accompanied by the use of more and better ballast, the expenditures for additional ballast having increased from \$9,471,311 in 1923 to \$16,520,000 in 1926 or 74 per cent. Similar attention is being given to the installation of more and better tie plates, to the use of stronger joints, to the more universal adoption of rail anchors and other proven track accessories and to all of those other elements that go to make up a stronger track.

In this period during which the railways have made these liberal improvements for the strengthening of their track, they have handled the heaviest traffic in their history with almost complete absence of delay and congestion. This is not a coincidence. Rather, it is a striking demonstration that good track, well maintained, is an important factor in the movement of traffic. It is self-evident that track must be strong enough and sufficiently well maintained to carry the traffic moving over it with safety. The expenditures that the roads are now making indicate an appreciation on the part of their managements of the fact that it is economical to go beyond this minimum requirement with improvements designed to move the traffic with greater dispatch and regularity and to enable the track itself to be maintained more economically.

The work that some of the roads have already done in the strengthening of their track structures offers ample proof of the fact that splendid returns can be secured from still larger expenditures for the more general rebuilding and strengthening of track and that when this is done transportation, as well as maintenance-of-way costs, will be reduced still further.

Opinions Are Not Enough

IT has been the custom for many years on some of the larger and better organized American railroad systems to make a careful study of the operating results of each new locomotive design and each important item of special equipment as it is introduced, in order that a reasonably accurate appraisal may be made of the return actually realized on the new investment. Such studies, whether dignified by the title of formal tests or merely based on segregated operating costs and operating statistics, are highly essential to the development of a motive power policy which is in close phase with the operating requirements of the road.

It is true that after a few road or plant tests it is possible to predict the operating results of a locomotive or a piece of special equipment under certain conditions. These, however, may be ideal conditions, or, if over-the-road conditions, may represent only one set of such conditions, and even though it may not seem difficult to make allowances in the ideal results to adjust them to fit variable conditions on the road, the amount at stake justifies the precaution of a service check. Moreover, it has not infrequently happened that such a check reveals a failure to realize the expected return on the investment. In some cases this is because of a lack of traffic or because of road conditions of a nature not to permit the realization of the expected return. In other cases it may reveal opportunities for materially improving the return on the investment by relatively simple changes in operating methods. In other cases the failure to earn the expected return may be due to improper handling of the equipment—conditions which, without a careful operating check, might continue indefinitely.

Complaint is frequently heard that modern motive power is expensive. This is true if judged on a comparison of prices of locomotives either by the unit or by the pound. Where such power can be fully utilized, however, the story is a different one when the comparison is made on the basis of output capacity per dollar invested. Certainly with the relatively large investment in the modern locomotive no road investing in such power can afford not to check by a careful study of operating results, the soundness of its assumptions, the suitability of the new power for each set of conditions on the road and the correctness of the methods of handling it.

Opinions alone, even though supported by apparently sound reasoning, are not enough.

The Real Reason

DIVISION 4 of the Interstate Commerce Commission, Commissioners Meyer, Eastman and Woodlock, has adopted the report of its examiner and has refused permission for the Delaware, Lackawanna & Western to give to its stockholders via the Lackawanna Securities Company, certain bonds of its leased subsidiaries. It is afraid that the Lackawanna might some day, by some calamity, be attacked by a blight or something equally dangerous, become poor and find itself unable to pay the rentals on these leased subsidiaries and thereby lose possession of them. Lackawanna stock is of \$50 par value and is now selling at 165, or over three times its par value. The proposal was to establish a new company, the Lackawanna Securities Company, the stock of which was to be given to Lackawanna stockholders. The railroad was to turn over to the Securities Company 92 million of securities including 58½ million

bonds of the Glen Alden Coal Company, \$9,871,000 Morris & Essex 3½ per cent bonds, \$10,000,000 Morris & Essex 5 per cent bonds and \$13,635,000 New York, Lackawanna & Western 5's. The carrier supposed that it needed I. C. C. approval only with reference to the last two but the commission adds that there may be some question also about the second. It has no jurisdiction over the Glen Alden bonds. This may mean that the Securities Company can still be organized with assets of 58½ million instead of the 92 million originally planned.

The point to the commission's decision seems to be that it is willing to let the Lackawanna retire from the coal business, which is something that the carrier has been trying to do, assisted by the United States Supreme Court, since about 1909. The commission apparently questions whether the railroad should at the same time retire from the banking business. Possibly the federal regulators fear—if the play on language is permissible—that this would cause the railroad to appear too retiring. Or, on the other hand, possibly the commission is ambitious and wants to keep this railroad in the banking business so that the commission can set itself up to rival in a small way the Federal Reserve Board. Seriously, the trouble with the whole affair is that the Lackawanna is too prosperous. This is something that the commission cannot quite understand. Judging by its continued unwillingness to permit the carriers to earn their fair return of 5¾ per cent even on a confiscatory property value, prosperity is an advantage that the Interstate Commerce Commission does not regard as appropriate in the railroad industry.

Is No Compromise Possible?

DOES anyone who has really studied both the legal and economic questions involved in railroad valuation believe that the Supreme Court of the United States will uphold the majority decision of the Interstate Commerce Commission in the O'Fallon case? We have not heard or read an expression of opinion from any informed person to the effect that it will. It is extremely doubtful if the majority of the commission expects to be upheld.

On the other hand, is there anyone who really has studied the subject who believes the court will hold that valuation must be based on cost of reproduction new, and that subsequently railway rates will be so adjusted as to yield each large group of railways an annual return of 5¾ per cent upon its aggregate valuation? We have not read or heard any expression predicting that this will be the final outcome.

Men who deal in realities rather than theories anticipate that the final result will be a compromise settlement in which neither those who advocate one extreme policy nor those who advocate another extreme policy will get what they want and think they ought to have.

The reasons for this are various. The Supreme court has enunciated certain factors and principles that must be considered in making a valuation of a public utility or railway. It is because the majority of the Interstate Commerce Commission has so far disregarded these factors and principles in formulating its method of valuation that it seems wholly improbable it will be upheld. The commission is not a law making body, but an administrative one charged with giving effect to certain laws; and then, as in this instance, it plainly tries to make new law for both Congress and the Supreme Court, the improbability that it will succeed in its undertaking becomes extreme. On the other hand, there appears to be

no provision of law or decision of the Supreme Court that warrants any expectation that the court will hold the railways are entitled to a valuation based on present cost of reproduction without any deduction for depreciation.

Finally, as a practical matter, entire structures of rates never have been and probably never will be based entirely or even mainly on valuation. Rates must be made to develop and move traffic and in accordance with competition between the railways themselves and between them and other carriers. They must also be made with some regard to public opinion, and public sentiment would hardly tolerate rates that would yield a fair return on a cost of reproduction new valuation unless convinced that this return was required to enable the railways to render good service and make the improvements essential to economical operation.

Suppose, however, that the commission maintains the extreme position taken by it in the O'Fallon case. By taking this extreme position it has largely destroyed the confidence in its intelligence and fairness of those who realize how far it has gone in favoring a confiscatory policy. A decision of the Supreme Court completely condemning its attitude would in the eyes of many further discredit the commission, while to others it would seem to justify wholesale criticism of the court as the friend and defender of the "interests." The railways will be embarrassed if it is necessary for them to conduct prolonged litigation over valuation because they will make claims which to most people will seem extreme, but which, as a matter of legal strategy, they will be unable to avoid making.

Their lawyers cannot anticipate with any assurance just what factors the court will hold must be considered or the relative weight that should be given them. The court will be obliged to pass upon the question of depreciation. It will have to pass on the relative weight that should be given to actual investment and cost of reproduction new. No doubt it will be called upon to determine what weight should be given to earning capacity. Believing that the court will hold that weight must be given to these and other factors, but not knowing how much, counsel for the railways probably will be obliged, in order to make the record of the case complete, to contend for cost of reproduction without depreciation, for recognition of earning capacity—in other words, to make every claim which, if granted, would tend to increase the valuation.

Material for Propaganda

The use in propaganda against the railways that will be made of such claims can easily be anticipated. "Labor," the weekly organ of the railway labor unions, in commenting upon a recent editorial in the *Railway Age*, had this to say: "There are two payrolls on every railway—one for dollars, capital invested, and one for men, the actual workers. Everyone agrees that the man payroll should be clean; that every man who draws pay should be on hand to give service. * * * But Wall street wants to pad the dollar payroll. It wants to draw pay, that is, profits, on from 10 billion to 20 billion dollars that never were invested, but that can be put on the payroll through the 'reproduction cost' fake. At the rate of return laid down in the Transportation Act that would cost the public from \$575,000,000 to \$1,150,000,000 per year. And now, Wall street has the supreme crust to try to fire Interstate Commerce commissioners who protect the public from extortion, and replace them with creatures who will let the interests pad the railroad payroll with from 10 to 20 billion phoney dollars!" In another issue it raised its esti-

mate of the "phoney" dollars involved to 33 billion. This is a more or less extreme example of the kind of propaganda that will constantly be disseminated among railway employees and the public as long as valuation is the subject of litigation and public controversy involving extreme claims. If the railways answer that they never expect to have rates made on a cost of reproduction new valuation they will be in the unenviable position of contending in the courts for something that they say elsewhere they never expect to get. It is surely worth considering what will be the effect upon public sentiment and, consequently, on the future of the railways, of keeping them for years in such a position.

Since some kind of a compromise appears certain to be the final outcome, if private ownership is maintained, is it necessary that it be postponed until after years of litigation and all the injurious public controversy that will be incidental to it? The Interstate Commerce Commission is an administrative body. It is therefore not bound by rigid rules of procedure like a court. Is it inconceivable that, on further consideration in other valuation cases, it might recognize the fact that in the O'Fallon case it has, as a matter of both law and economics, taken a position too extremely adverse to the railways? On the other hand, the directors and officers of the railways are not without discretionary authority, and therefore are not legally, morally or economically bound to fight to the bitter end for every factor and principle recognition of which would tend to produce a high valuation.

A Sane Suggestion

The suggestion has been offered by some public-spirited men who are not connected either with government regulation or the railroads that in some way a working basis of valuation that would be between the extremes now being advocated might be arrived at; and while the suggestion may seem Utopian it seems to have the merit of good sense. The question of railroad valuation is replete with possibilities of endless litigation and trouble, and during all the years this litigation and trouble were going on it would be necessary, as it has been in the past, for railway operation and regulation to continue and for the railways to earn a return on some basis which would not be that sought by the railways and perhaps would not be that favored by the commission in the O'Fallon case. Since they have been conducted and regulated in the past, are being now, and must be for some time in future without any valuation that accords with anybody's theory, why should it be impossible to arrive at a reasonable and practically permanent compromise without a previous struggle of indefinite length in the courts?

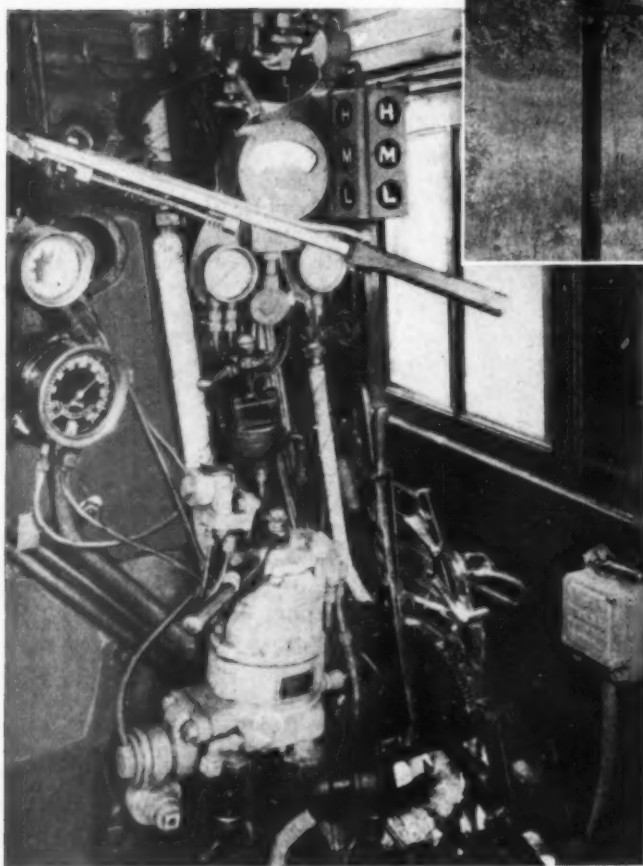
What both railways and public ought to want are rates, which, first, will move the traffic, and, secondly, will produce net returns sufficient to enable the railways to raise enough capital to make all the enlargements and improvements in their properties required in the interest of adequate service and economical operation. The commission's decision in the O'Fallon case is being attacked on legal grounds, but the real reason why it is so objectionable is the economic one that rates based on it would deny the railways the earnings they now require and will require to raise adequate capital. In other words, the vital issue presented is an economic and not a legal one. It seems strange that an administrative body such as the commission should not have found, or apparently even sought, an economic and business solution of the railroad problem, instead of taking a position, which, if maintained, must leave it to be solved mainly by judicial, rather than administrative, means.

Santa Fe Train Control Aids Traffic

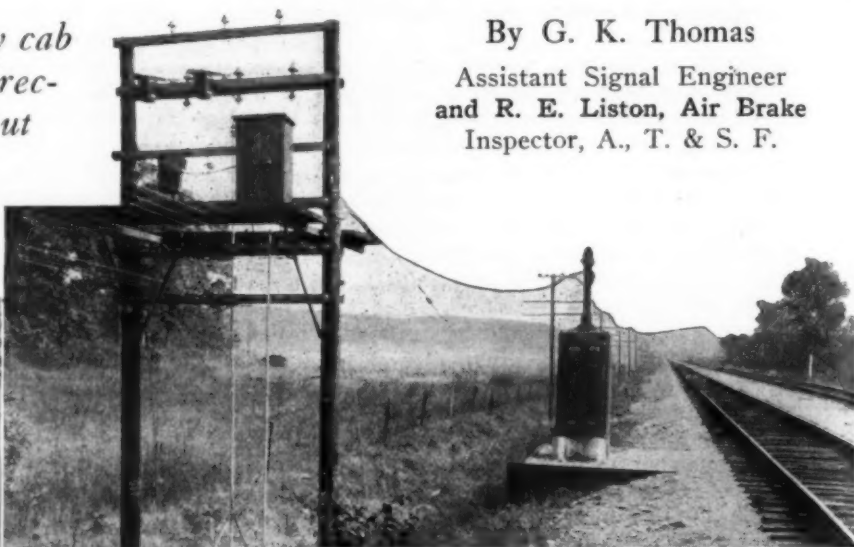
Train movements directed by cab signal indication in either direction on double track without intermediate wayside signals

By G. K. Thomas

Assistant Signal Engineer
and R. E. Liston, Air Brake
Inspector, A., T. & S. F.



Cab Signal, Speed Indicator and Engineman's Brake Valve



Relay Case and Pole Framing at Block Location

automatic train control system. The second order covers the territory between Chillicothe and Pequot, 73 miles, on which the installation was completed March 31, 1927.

No wayside signals are used except at interlocking plants. Only engine cab signals are used to indicate the maximum speeds at which trains may operate. The cab signal consists of a three-light unit mounted in front of the engineman, in which illuminated letters indicate the permissible speeds. Letters show to the front and left so that both the engineman and fireman can observe the indication. Fogs occur in the vicinity of the Mississippi river, extending at times over the entire territory equipped with automatic train control. These conditions make cab signaling especially desirable and enginemen are enthusiastic in its praise. During heavy storms or other periods when the view is obscured and time is lost on the portion of the division not operated under automatic train control, it is not unusual for a train to make up lost time on the territory where train control is in operation. The line traverses a rolling country with ruling grades of 0.6 per cent except for a short section of 1.1 per cent pusher grade westward. There are long stretches of tangent track throughout most of the territory, but curves and cuts occur in many places which make it difficult to locate wayside signals in such positions as to provide good view.

The track is divided into sections or blocks from 3,800 to 4,200 ft. in length, averaging 4,000 ft., and the circuits are so arranged that a train occupying any block imposes "low-speed control" not only in the portion of that block to the rear of the train, but also throughout the entire length of the first block in the rear, and "medium-speed control" throughout the entire length of the second block in the rear. Thus a train carries behind it continuously a zone of low-speed control of 4,000 to 8,000 ft. and behind that a zone of medium-speed control of 4,000 ft.

This spacing of blocks was determined on the basis of a heavily loaded oil train, which has the lowest braking power of any class of train operated on the division. It thus provides ample rear end protection under all ordinary conditions of operation. A chart of the controls set up in the rear of a train through an interlocking plant and between stations, is shown in Fig. 1.

PURSUANT to the orders of the Interstate Commerce Commission in 1922 and 1924, the A. T. & S. F. has installed a complete system of automatic train control providing for cab signals on the Illinois division between Ft. Madison, Iowa, and Pequot, Ill., a distance of 175 miles of double track. The system used is the Union Switch & Signal Company's continuous three-speed control and the circuits are so arranged that trains may be run in either direction on either track with complete automatic train control protection. All equipment was installed by railway forces. Previous to the installation of automatic train control this territory was operated under manual block except for three short stretches, totaling 37 miles which were equipped with automatic block signals.

The first order of the commission covered the territory between Ft. Madison and Chillicothe, Ill., 102 miles, and this installation was placed in service on January 1, 1925. On March 28, 1927, the manual block and automatic block systems on this territory were abolished, all trains being governed thereafter by the

Either-Direction Operation Facilitates Movements

On the Illinois division, 19 regular passenger trains are operated on week days and 17 on Sundays, as well as numerous freight trains and extra sections of passenger trains, the average movements each day being approximately 40 trains in both directions. On the portion of the division near Chicago, the eastern terminal of the Santa Fe, both passenger and freight business is especially heavy eastbound during the early morning hours, while the westbound movement is heavy during the late evening. This condition results in the fleeting of trains, both passenger and freight, eastbound in the morning and westbound at night, and in order to facilitate traffic the system was so arranged that both tracks can be used for traffic in the same direction whenever this is necessary.

This system of reversing traffic permits freight trains to operate on the scheduled time of passenger trains and eliminates delays on sidings and in the terminal before starting.

Freight trains running on the scheduled time of passenger trains between Ft. Madison and Chillicothe have reduced the running time from 30 min. to 1 hr. 30 min. below the time which would have been consumed under conditions existing previous to placing the system in operation. In addition, the tonnage has been increased about 500 tons, the average loaded train now consisting of about 84 cars as compared with a previous average of 74 cars. This latter change was made possible because, under the new conditions, a freight train seldom has to enter a siding but can be kept moving with few stops between terminals. This also results in longer life of equipment and less consumption of fuel.

The new system also greatly facilitates the performance of heavy track work such as rail replacements, surfacing, ballasting, etc., because trains may be detoured over the other track. This has already proved of practical advantage. All of the above have a definite money value, although it would be difficult to determine the actual amounts.

Examination of train sheets shows that under present conditions 5 to 10 reversals are made per day and it is probable that this number will be increased considerably with heavier traffic. When a train is to be detoured against the normal current of traffic, the operators at all stations concerned are authorized by train order to carry out the reversal and such movements of trains are directed by signal indication only, except where interlocking plants are not provided. At such stations trains are permitted to cross over to run against the

normal current of traffic only when authorized by train orders.

Special Rules Prepared

The following is a copy of the special rules for operation under automatic train control:

"1. Effective noon Monday, March 28, 1927, between East Ft. Madison and Chillicothe depot, trains will be governed by the automatic train control system. All operating rules and special instructions will remain in effect except as hereinafter modified.



Automatic Substation Building at Chillicothe, Ill.

"2. Manual block system and automatic block signal system on this territory will be abolished. Interlocking distant signals will be removed. Engines backing up must be operated under control and not in any case to exceed a speed of 20 miles an hour.

"3. Engine cab signals will indicate the maximum speed at which a train may operate, that is:

	Passenger	Freight
"H" High	65 m.p.h.	45 m.p.h.
"M" Medium	40 m.p.h.	30 m.p.h.
"L" Low	20 m.p.m	20 m.p.h.

except that while operating with a low indication, trains must run under control. Rule 789 is hereby modified to permit speeds in excess of ten miles per hour for main line movements against the current of traffic, when passing dwarf signals which give a proceed indication. The absence of a light in the engine cab signal must be regarded as a low indication.

"4. Trains will run against the current of traffic when authorized by signal indication, from stations having interlocking plants to such stations where returned to the 'current of traffic' track. Before trains cross over to use the other main from stations that do not have interlocking plants, such crossover movements must be authorized by train order reading as follows:

No. 56, Engine 1054 use westward track from Laura.
They will then proceed on signal indication.
This will supersede timetable authority.

"5. When train control seriously interferes with the schedule

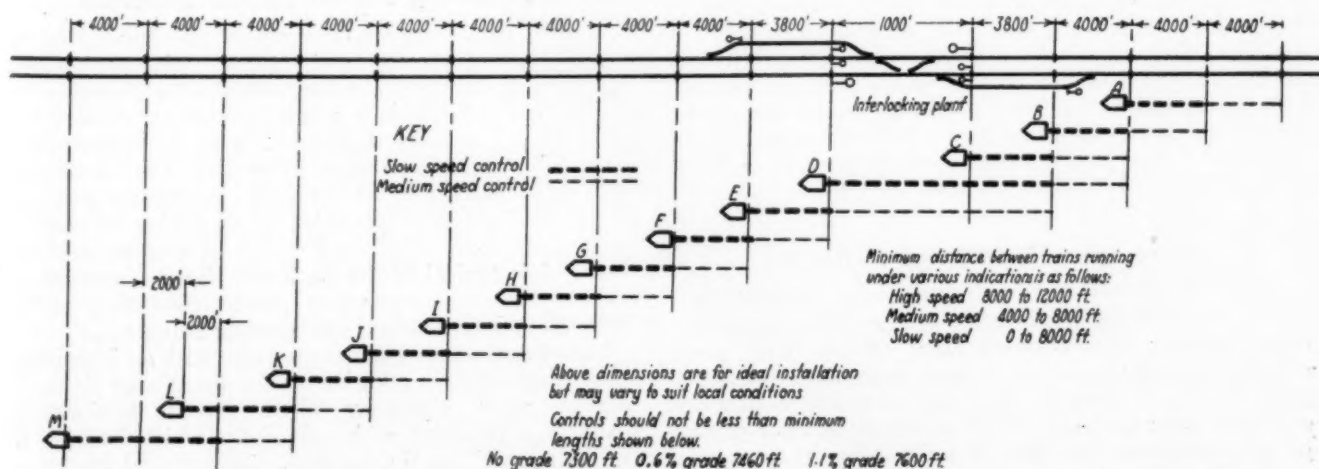


Fig. 1—Diagram Illustrating Slow-Speed and Medium-Speed Control Limits

time of trains being maintained, train will stop at first open office and ask for instructions. The train control equipment on engines must not be cut out. Engines not equipped with train control, or with same inoperative, must not be used in road service outside yard limits without train order defining specifically the movements authorized, except second engine double-heading.

"6. When night signals are displayed, trainmen on a train that is being passed by train on opposite main track will turn the marker (on the side next to the opposite main track) green as an indication to the passing train that a train with marker so displayed is being regularly handled on the opposite main track and in the clear of the main track that the other train is using.

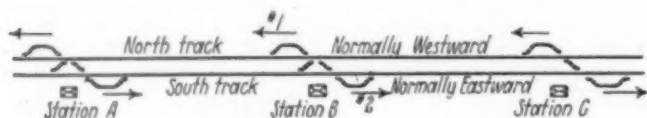
"7. Rule 99 must be observed in automatic train control territory, as elsewhere. (Flagging rule.)"

Description of Control

The three-speed continuous control system necessarily requires the establishment of three different electrical conditions in order to provide the three controls. These three conditions are brought about by the proper control of alternating current circuits in the rails which establish magnetic fields around the rails and affect the receiving apparatus mounted on the locomotive.

In the "track circuit," a transformer feeds current down one rail through the track relay, or the axles of any train which may be in that particular section, and back through the other rail. In the "loop circuit" the current travels down both rails in multiple (the same direction under the train). At the end of the track section the currents in the rails are brought together and return over a wire installed on the pole line.

The "track receiver," being at the front of the locomotive, picks up the track current energy before it is



Traffic Direction Control Scheme Between Interlockers

shunted by the wheels. The "loop receiver," being mounted on the rear end of the tender, is out of the zone of track circuit current because this has been shunted through the wheels of the locomotive. The coils of the "loop receiver" are connected in such a manner, however, that the voltages induced in them are additive for currents passing through both rails in the same direction, and hence are affected solely by the "loop circuit" current.

The "high-speed" indication is established when the track is unoccupied for a specified distance ahead. It is brought about by energization of both the "track circuit" and the "loop circuit" with the *normal* direction of current flowing in each circuit. The "medium-speed" indication is established when the track is occupied at a specified distance ahead. This is brought about by energization of both the track and the loop circuits but with the current in the latter circuit *reversed*. The "low-speed" indication is established when the track is occupied at a specified shorter distance ahead. This is brought about by de-energization of either the "track circuit" or the "loop circuit."

Locomotives Have Speed Indicators

Approximately 90 locomotives are used in road service on the Illinois division, all equipped for automatic train control. The various parts of automatic train control making up the locomotive equipment have been grouped and located on the engine where convenient and space was available. The principal parts or groups of the equipment are located on a Mikado type locomotive as follows:

The control governor, including timing valves, relay

valves and electro-magnets, is mounted on a wrought iron bracket above the front deck, ahead of and slightly below the smoke arch. The governor is driven through a vertical, telescopic shaft which, in turn, is driven by a set of gears mounted on an extension of the front truck axle. The application portion, containing a pilot valve, the main application valve, the equalizing piston, reduction limiting and insuring valves, suppression valves, split-eliminating valve and four small reservoirs, is located on top of the boiler near the main steam dome. The engineman's brake valve is placed in the usual location in the cab, the handle being in easy reach of the engineman when seated. The acknowledging valve is mounted slightly above and between the brake valve and the boiler back head. The cab signal with air gages and speed indicator are grouped on the boiler back-head slightly above the line of vision and in front of the engineman when seated in his usual position. The high speed cut-out switch is mounted on the wall of the cab below the windows and in easy reach of the engineman.

The equipment box containing the amplifier, the a-c. vane type train control relay and an electro-pneumatic cut-out relay is located on top of the boiler, just back of the main sand dome, and is mounted at right angles to and on the center line of the boiler. The track receiver is fastened to the heel of the pilot with the lowest point about six inches above the top of the rail. The loop receiver is mounted on a cast bracket under the bumper beam on the rear of the tender with the lowest point approximately five inches above the top of the rail. The electric speed indicator provided in the engine cab has a dial clearly marked to indicate the speeds at which automatic brake applications will occur when the various speed limits are imposed by the automatic train control system. Two "blow-down" gages are also provided in the engine cab, which indicate the duration of time delay elapsing between a change of indication and the beginning of an automatic application of the train brakes. These devices greatly facilitate the handling of the equipment by enginemen in such a way as to avoid unnecessary automatic applications of the train brakes.

All air pipe and conduit are carried on the right hand side of the engine. Extra heavy steel pipe was used throughout the installation except for small sizes where copper pipe could be used to advantage. The conduit and fittings were applied to exclude moisture, yet each low point of the system is drained, the drain holes being placed so that water will not run in and in case water is forced in, it will run out before accumulating sufficiently to reach terminals.

Interlocking Plants Control Reversals

A total of 26 interlocking plants are located in the 175-mile territory, making the average distance between interlocking plants 6.7 miles. With the exception of two electric interlocking plants protecting draw spans, all of these plants are mechanical with single-unit three-color light signals on main lines and single-unit two-color light signals on side tracks. Complete approach and route locking is provided at all plants in both directions on each main track. The arrangement shown in Fig. 1 is typical of the track and signal layouts at the majority of the interlocking plants, consisting of two main line crossovers and two passing sidings.

Each interlocking plant is provided with an illuminated track diagram. In addition to the usual spot lights indicating track occupancy of the various sections, the diagram is provided with spot lights which indicate the traffic "set-up" on the normally approaching tracks, established by the adjacent plants in each direction, as well as track occupancy throughout the entire distance

between plants in the normally leaving direction on each track.

Traffic reversal is manually controlled from each interlocking plant. The normal current of traffic is to the right, westward trains normally occupying the north track and eastward trains occupying the south track. Each interlocking machine contains two traffic levers, one of which governs the traffic direction "set-up" to the next interlocking plant on the north track, while the other governs the "set-up" to the next interlocking plant on the south track. Where necessary to permit switching moves against the traffic "set-up," a push button is provided so that signals may be caused to indicate "proceed under control." Any movement against the traffic "set-up" is necessarily at low speed because both track and loop circuits are then set for the opposite direction of traffic.

The automatic blocking of trains is accomplished entirely by the cab signal and automatic train control system, while fixed signals at interlocking plants are used only to control movements through the plants and to authorize through movements. There are no fixed distant signals. Leave-siding signals are provided at the far end of passing sidings and these are interlocked with traffic levers to prevent movements out of sidings against the direction of the traffic "set-up."

Pole Line and Power Supply

A separate pole line is used for the automatic train control and signal system between Fort Madison and Ancona, consisting of 25-ft. poles except where longer poles are necessary through interlocking plants, over crossings and for other special conditions. Butt-treated Western yellow pine poles are used between Fort Madison and Chillicothe and full-cresoted Southern pine poles between Chillicothe and Pequot. Forty-four poles are used per mile, making the spans 120 ft. except that crossing spans are not longer than 100 ft. Between Ancona and Pequot 30 ft. and longer poles are used to accommodate the Postal Telegraph Cable Company's 30 line wires which are carried on three cross-arms beneath the secondary A.T.C. and signal wires.

Power is transmitted as 60-cycle, 3-phase current, ungrounded, with power transformers connected in closed "delta." The line voltage between Chillicothe and Fort Madison is 6,600 volts, while that between Chillicothe and Pequot is 4,400 volts. The higher voltage was used between Fort Madison and Chillicothe to provide sufficient power for the addition of wayside signals in case they should be considered necessary. Prior to the installation between Chillicothe and Pequot it was decided definitely that wayside signals would not be used and the consequent reduction in power requirements made it possible to use 4,400 volts in the latter territory.

The automatic substation equipment supplied by the General Electric Company is arranged so that power is normally fed from one end of each main section and in case this source is interrupted due to any cause, the automatic equipment functions, cutting off the source which has been interrupted and immediately connecting the power source at the other end of the line. This action takes place so rapidly that only a slight blink in the lights is noticeable.

How Speed Control Is Used in Train Operation

If a train is running under "high-speed" indication and exceeds "high-speed", an automatic application will be made in five seconds, which will be visually indicated on the air gage by the main reservoir needle or red hand dropping to brake pipe pressure; however, if the engineer laps his brake valve promptly after the application

begins, it will persist only until the train speed is reduced slightly below the "high-speed" limit, when the application piston will move to normal position, restoring main reservoir pressure to the feed valve and the engineer's brake valve, which will be indicated by the "flip" or return of the main reservoir pointer or red hand on the air gage to normal position, at which time the engineer may manipulate his brake valve and release the brakes in the usual manner.

If a train is running under "high-speed" indication and a change of indication from "high" to "medium" is received, an automatic brake application will result, if



Old Style Semaphore Signals at Illinois River Bridge Interlocking Before Replacement by Color-Light Signals

the train is running above the "medium-speed" limit, after a "blow-down" delay period depending on the speed of the train (30 sec. if the train speed is just above "medium" and 5 to 8 sec. if the train is at or near the "high-speed" limit). This application can be avoided if the engineer reduces the speed below "medium" before the end of the delay period. If the train speed is not reduced and an automatic application takes place, it will persist until the train speed is reduced below the "medium-speed" limit when a release can be made by the engineer, provided the brake valve has been in lap position long enough to restore main reservoir pressure to the feed valve and brake valve which will be indicated by the return of the main reservoir hand on the air gage to normal position. No automatic brake application will occur with a change of indication from "high" to "medium" if the train is running at less than "medium-speed" limit.

An automatic brake application will occur when a train is running at any speed, or standing, when a change of indication from "high" to "low", or "medium" to "low" occurs, unless the change of indication is "acknowledged", and the train speed reduced (if necessary) below the low-speed limit before the end of the "blow-down" delay period. If the engineer fails to acknowledge a change of indication to "low-speed", an automatic brake application will result in 5 to 40 sec. depending on the train speed. If an automatic brake application

starts, the engineman must lap his brake valve and train speed must be below the "low-speed" limit before the brakes can be released.

In all cases where an automatic application is made, the engineman must lap his brake valve and leave it in the lap position until the red hand of the air gage returns to normal, as in no case will an automatic application of the brakes be released automatically. An acknowledgment is made by moving the valve handle forward to the acknowledging position immediately after a change to "low" indication and leaving it in that position until the blow-down gage pressures are below 30 lb. or until the indication changes from "low" to "medium" or to "high", and then returning the handle to normal position.

An automatic application suppression feature is provided whereby the engineman can forestall an automatic brake application by making a manual reduction of sufficient amount and in time to reduce the train speed below the imposed limit at approximately the same point where it would be accomplished by the functioning of the automatic application valve. If the engineman should fail to make a sufficient application to reduce the speed below the imposed limit in the time allowed, the automatic apparatus will make a further brake pipe reduction to complete a full service application. The suppression feature is provided, primarily, to avoid an automatic reduction on top of a manual reduction where the manual reduction is sufficient to reduce the speed at the proper time and rate, and thus permit the engineman to handle his train without undue interference by the automatic apparatus.

Maintenance of Engine Equipment

An organization has been developed and plans carefully worked out for maintaining the train control engine equipment adequately. Inspectors are employed at each engine terminal who test and inspect each engine arriving at the terminal. To do this the engine is "spotted" on a special test circuit so arranged that all operating conditions are duplicated. Air pressure is put in every pipe and a check is made for leakage; each air valve is moved in a normal manner to check the operation and each timing feature is checked within fixed limits. Each electric circuit is energized, checked for continuity and each electric function is operated normally and checked within fixed limits of voltage and current for operation. A test is made for grounds and the headlight generator voltage is checked. A complete record is made of the tests on a proper form. This record, together with the engineman's report of road operation, accompanies the engine into the roundhouse where it is checked by workmen who repair all defects noted and make sufficient tests to assure that repairs have been properly made.

When an engine is ready for a trip and before it leaves the terminal, the equipment is again checked by an inspector for operating characteristics and finally by the engineman who runs the engine over a special test track and checks the operation. An engine is never allowed to leave a terminal unless the equipment functions properly under all tests.

A periodic inspection is made to check wear, breakage or deterioration that would not be disclosed by a daily inspection. The pneumatic equipment is removed every 60 days, cleaned thoroughly and all worn parts replaced. The electric equipment is completely inspected once each month.

A permanent office record of this work is maintained and a card is placed in the cab of each engine showing when each particular inspection is due and made.

General Investigation of Signaling and Train Control

THE Interstate Commerce Commission has ordered a country-wide investigation of automatic train control and also of automatic (visual roadside) block signals, including all installations on the lines of Class I railroads; the object being to determine whether additional installations are necessary for increased safety in train operation. Accompanying the Commission's order, which was made public August 1, was a questionnaire calling for information to be furnished not later than October 1. Hearings will be assigned at a later date.

The proceeding is in "Docket No. 13413, Automatic Train Control Devices," which is reopened for the purposes of "a further investigation into and concerning installations of automatic train-stop and train-control devices and, in addition thereto, block signal systems, including specifications and requirements in respect thereof, with a view to determining whether, and to what extent, existing installations of these devices and systems now in use on the lines of Class I carriers, excluding switching and terminal companies, are adequate; and if found inadequate, what additional installations should be made; to the end that increased safety in train operation may be obtained."

The questionnaire contains 20 main points with numerous sub-heads. One hundred and sixty-eight Class I roads are made respondents.

Under the head of automatic train control, the order embraced in the questionnaire calls for a general summary record of the behavior of installations now in use, with statistics of number of miles, number of locomotives, and cost of maintenance for one year; failures (*false clear*, undesired stops, all other failures); train mileage; train mileage with apparatus inoperative; accidents which ought to have been prevented; and a record of accidents *on this same territory* during the five years *preceding* the installation of automatic train control.

Report Mileage Operated

Under the head of block signal systems, the report is to cover mileage of road now thus operated, cost per 100 miles per year (last 12 months available); failures of *automatic* block signals for five years; and train miles run without signal protection because of automatic signal failures. Also a statement of all accidents in block signal territory, *from completion of installations* to the present time, which the block signals were designed to prevent.

Under general information the order calls for method of controlling trains where there is no block system; and whether dispatching is done by telegraph or telephone. For one month, in the year 1926, covering the heaviest month and the busiest division, a record of train movements on that portion of the road not equipped with train control and on any portion not equipped with automatic block signals. Statement of total damage to railway property and total payments for deaths and personal injuries resulting from collisions, during each year 1920-1926. Furnish brief history of all accidents in the years 1920-1926 on the division reported as doing the heaviest business in a single month of 1926, which accidents automatic train control or the block system would [presumably] have prevented. Report number of highway grade crossings eliminated during each year, 1920-1926, and cost of same to the railroad.



A Silk Train on the Great Northern

Physical Betterments Improve Railway Efficiency

*New cars, locomotives, tools and machinery aid in many
phases of transportation service**

By Ralph Budd
President, Great Northern

THE improvement of railroad transportation performance in the United States since the World War has been so phenomenal as to bring forth universal acclaim and commendation. Various explanations are given for the accomplishments of the carriers, among them being the better understanding between the railroads and the public; the co-operation of shippers and management in analyzing future traffic movements and planning in advance to meet the requirements as well as to utilize equipment to best advantage; the willing spirit of the railway employees; and finally the improvements and enlargements made to the physical properties of the railways. All of these things have been contributing causes in bringing about the changed situation, but I refer especially to the one last mentioned; namely, the physical improvements which have been made in recent years.

Since 1920, when the period of federal control ended and the railroads of the country were returned to their owners for operation, \$4,000,000,000 has been added to railroad investment in the United States. This means the expenditure of probably \$5,000,000,000 for new facilities, because the added investment of \$4,000,000,000

is arrived at by deducting the amount representing the cost of old facilities replaced by new. The total property investment now is approximately \$24,000,000,000 and it is fair to say that one-fifth of that investment is in property which the railways did not have during the World War. As a result of these expenditures and the general improvement in railway morale and public relations, which in my opinion came largely from the better physical conditions, the railways of the country in 1926 handled without appreciable delay the largest volume of traffic in their history, being 40 per cent more than in 1921, the first year of private operation after the war. Yet the number of physical units shows a surprisingly small increase. For example, at the end of 1926, compared with the end of 1920, for Class I roads:

	1926	1920	Increase
The road mileage was.....	237,000	234,700	2,300
The number of locomotives was.....	62,800	64,800	D. 2,000
The number of freight cars was.....	2,350,000	2,322,200	27,800
The number of passenger cars was.....	54,800	53,500	1,300

The terminals have been enlarged, as is shown by the fact that at the end of 1926 there were 393,500 miles including all tracks, compared with 377,000 miles at the end of 1920. If figures were available, it probably would be shown that the average length of passing tracks has increased from 3,000 to 5,000 ft.; the aver-

* From an address before the National Electric Light convention at Atlantic City, N. J., June 8, 1927.

age capacity of locomotives from a tractive power of 36,000 lb. to 42,000 lb.; and the average box car capacity from 37 tons to 40 tons.

Maintenance of Way

The average weight of rail on main tracks is heavier and the number of tie plates has greatly increased as well as their average size and weight. The average track has more ballast under the ties. It is estimated that 80,000,000 rail anchors or anti-creepers have been applied. These small, almost hidden devices are among the greatest of all aids in improving railroad track and reducing cost of maintenance.

Nowhere has the change been greater than in applied track labor. Not long ago the track gang on the average railroad plodded its weary way to work on a hand car propelled by the well-known walking beam geared to the wheels. The ride was no less slow than wearisome, with the result that the men consumed a large amount of time in useless effort and arrived at work already fatigued. Moreover, the average section under such conditions was five or six miles long, necessitating section buildings, including tool house, bunk house, and cottage, at these frequent intervals. The motorized section car with a speed of 15 miles an hour or more is now a universal appliance on the modern railroad. It is used for bridge crews, signal maintenance, and inspection purposes as well as for the track men. It has removed a disagreeable feature from maintenance of way work and has reduced the number of sections to about half their former number by making it practicable to double their length.

Track work is done by methods as much improved as the means of traveling to and from the job. When rail is changed, a self-propelling crane picks up the new rail from alongside the track and sets it into place. Not only are worn frogs and crossings rebuilt in place by oxy-acetylene welding, but rail with battered ends is restored to proper section by this means and its usefulness extended in some cases several years. Self-propelling weed burners, weeding machines, pile drivers, ditching machines, and bank spreaders are in common use and together with tie tampers, bolt tighteners, spike drivers, tie scorers, and tie adzing and boring machines rob roadway maintenance of much of the drudgery of former days, save a great deal of time, and in most instances do better work than could be done by hand.

A surprising result which has come from these improvements in track methods, at least in the northwestern part of the United States where I am familiar with conditions, is that whereas a few years ago section work was performed almost entirely by foreign labor, today more than three-fourths of the section laborers are from neighboring farms and villages, and not only represent the very best type of labor, but consider this work preferred employment and carefully guard their seniority and continuity of service. Thus science and invention, which in mechanical and electrical fields have revolutionized so many phases of our civilization, have adapted modern devices to railroad track work, which constitutes about 15 per cent of the total operating expenses of the railroads. In practically every one of the improvements mentioned, the use of electricity plays an important and in most of them an essential part.

Maintenance of Equipment

Shop practice within recent years has undergone much the same change that methods of roadway maintenance have. In repairing locomotives and cars, use is made of cutting and welding devices, such as oxy-acetylene, electric welding, and thermit, and pneumatic machine

tools of many kinds have taken the place of hand tools.

Besides saving a tremendous amount of manual labor, the work is greatly speeded up; for example, where formerly a broken frame on a locomotive made it necessary to strip and remove the frame to be welded in the blacksmith shop, now it is necessary to do only very little stripping to weld the frame in place, thereby getting the locomotive in service in one-third the time that it formerly took to strip the engine and weld the frame, and, of course, greatly reducing the cost.

Gasoline and electric tractors are used to handle material about the shops, storehouses, and repair tracks, and traveling cranes are used for handling heavy materials from the cars and in material yards and terminals. In this connection, one of the most effective tools is the lifting magnet. More attention has also been given to working conditions, such as better lighting, both natural and artificial, better heating, better toilet facilities, and last but not least, safety precautions have been given a most prominent place in every phase of railway operation.

Steam Locomotives

It is just beginning to be realized that while in principle the steam locomotive is the same as it was a few years ago, the efficiency of the locomotive, as exemplified by the most modern type, has been practically doubled, measured in ton-miles of transportation per unit of fuel consumed. This economy of fuel has been the result of more effective combustion through improved firebox design, the use of brick arches, feedwater heaters, and exhaust steam injectors, and by more effective use of steam through superheaters, limited cut-offs, and high pressure boilers. Mechanical stokers have made possible the use of locomotives of a size too large for hand firing. Positive and superior lubrication has been a big factor in making longer locomotive runs practicable.

The use of hot water washout systems and better care generally of locomotives at roundhouses has saved in fuel as well as in the time locomotives are out of service. Larger tenders and locomotive boosters have assisted in handling heavier trains in shorter time between terminals.

The fuel bill constitutes about 10 per cent of the total operating expenses and about 20 per cent of the transportation expenses, so the possibility of a substantial reduction in fuel is a most significant thing. There are comparatively few locomotives in use, however, that are equipped with all of the latest improvements, but many of the appliances can be placed on existing locomotives. This has been done and is being done by railroads everywhere. The substitution of locomotives which represent the highest advancement in locomotive design for more obsolete types and rebuilding and improving the older locomotives offers a field for further operating economies by the railways, which is most encouraging.

An important fact that should be kept in mind is that stronger track and bridges have enabled locomotive builders to increase axle loads on the average railway beyond the allowable limit of a few years ago. This has made possible the largest and most efficient locomotive types of today.

Electricity and Transportation

Transportation charges, that is, the cost of moving cars on the road and in the terminals of railways, represent about 50 per cent of the total cost of railway operation and are materially affected by locomotive efficiency, both in the use of fuel and in the handling of larger trains at higher average speed.

Train movement has been expedited and safeguarded by extending the use of automatic block signals. As a result of research work carried on by the manufacturers of lenses, electric lamps, railway signals and mercury arc rectifiers, such things as colored light signals, automatic interlocking, and remote switch control have been put into general service with remarkable economy and improved efficiency.

The printing telegraph, the development of selective signaling, and the adaptation of telephone apparatus and of various devices originally developed in radio work have resulted in a complete line of telephone and telegraph apparatus for special uses on a railway. Some of the accomplishments of these are: The rapid multiple transmission of information simultaneously to a number of closely related points, such as bulletining time of trains, track assignments, and special instructions around yards and terminals; more economical and efficient handling of a greater number of trains over greater distances; extending the range of satisfactory operation of official long distance telephone circuits; more economical production of direct current through the use of tube and chemical rectifiers; and loud speakers for dispatchers' offices, signal towers, and for announcing purposes in passenger stations, etc.

Application of radio to railway operation is still in the process of development. It is being experimentally tested for emergency communication under adverse physical conditions where wire maintenance is temporarily interrupted; for communication between the head and rear end of trains; and for tugboat and harbor transfer dispatching. It seems probable that further development will result in its actual use under at least some of these conditions.

The improvements which have been made to the railways since the World War at a cost of \$5,000,000,000 and which have so materially changed the methods in maintenance of way, maintenance of equipment, and transportation, constitute very largely the reasons why the railways of the United States are able to pay increases of 100 per cent in wages, 100 per cent in taxes, and from 50 to 80 per cent for materials and fuel, with an average increase in freight rates of only 50 per cent, compared with the prewar period. The electric motor and the internal combustion engine both have played a large part in bringing about the economies in shop work, track work, material yards, safety devices, and telegraph and telephone communication to which I have referred. The consumption of electric power in the United States has almost doubled since 1920, having reached, according to estimates for 1927, the stupendous total of approximately 75 billion kilowatt hours per year. The increase of electricity by railroads in shops, tools, tractors, equipment, and buildings, both for power and light, probably has more than doubled during that time, but the electric energy used for handling trains has not increased so much.

Electric Traction

The advantages of electric motors in railway traction under certain circumstances have long been recognized. The experience of railway operating men who have used electric locomotives is universally favorable as to performance. Generally speaking, the only obstacle to be overcome in justifying the adoption of electric traction by railways is the high first cost. Great improvements in the steam locomotive and the use of oil for fuel, especially in the West, undoubtedly have made it more difficult to justify railroad electrification for the purpose of reducing the cost of operation.

On the basis of economy, the high initial cost of elec-

trification presupposes a heavy traffic in order to absorb the large overhead expenses. Not many railways have traffic so dense as to justify the expenditure, hence in most cases electrification is made on account of one or more other reasons, such as (1) avoidance of smoke and gas in tunnels and snow sheds; (2) elimination of fire hazard, especially through timbered areas; (3) the speeding up of train service, particularly over mountain grades, and the consequent increase in capacity of the line without building additional tracks in locations where such construction would be especially costly; (4) smoke abatement in cities; and (5) solving terminal congestion problems, especially in the handling of passengers in the vicinity of New York, Philadelphia, and Chicago.

The gradual but steady increase in railroad electrification proves that from time to time occasions arise where for the reasons above named, or other reasons, the electrification of steam railroads is justified.

A cursory review of the history of steam railroad electrification as it has been adopted in the United States and many foreign countries, brings out many interesting facts and there may be noted a steady improvement in the method of thus utilizing electric current. It is not at all unlikely that the further development of the electric locomotive toward greater efficiency, economy, and reliability will follow, just as one improvement has followed another in the field of steam locomotive design.

Erie Practices Criticized by I.C.C.

WASHINGTON, D. C.

THE Interstate Commerce Commission on July 30 made public a report by Commissioner McManamy, one of the series in connection with its investigations of Construction and Repair of Railway Equipment, criticizing the action of the Erie in leasing its marine repair yard and floating equipment to a private concern, the arrangement regarding the shifting and transferring of its freight in New York harbor, and the repair of its floating equipment, as "not, under the circumstances detailed in the report, in the interest of efficient and economical management as required by section 15a of the act." It is also stated that the expenditures by the company for repairs to certain of its car floats at the plant of the Hudson Shipbuilding & Repair Company, and the compensation paid to the Phoenix Transit Company for lightering, towing and shifting of vessels in New York harbor, were "excessive and not in the interest of efficient and economical management." Some of the transactions also are described as "repugnant to sound business methods and in some cases at least repugnant to good conscience."

A feature of the report is its discussion of relations to the transactions of Russell S. Underwood, son of Frederick D. Underwood, then president of the Erie, who is said to have been, while having official connection with the Erie system, a heavy stockholder in and actively connected with the companies having leasing and repair contracts with the Erie.

The opening statement and summary of the report are as follows:

On February 11, 1924, we instituted upon our own motion an investigation into and concerning all matters relating to the arrangement by which the marine repair yard and certain floating equipment of the Erie Railroad Company and subsidiaries, hereinafter referred to collectively as respondent, were leased; the reasonableness of the compensation paid to contractors for performing lightering, towing, shifting of vessels, and fire protection of water-front property in New York harbor and repairs to floating equipment; and the names of all persons who receive directly or indirectly such compensation or the benefits thereof.

Previously we had instituted an investigation concerning the repair of respondent's locomotives and other equipment at construction or repair shops other than its own, and our report with reference thereto is found at 93 I. C. C. 646.

Prior to the hearing our investigators examined respondent's records together with pertinent records of the United States Railroad Administration and of this commission. The record comprises the evidence submitted by our investigators and by respondent.

This report primarily relates to dealings between the respondent and three corporations, the Phoenix Transit Company, the Hudson Shipbuilding & Repair Company, and the International Marine Welding Company, referred to hereinafter as the Phoenix, the Hudson, and the International, respectively. The report also deals with the pecuniary interests of officials and employees of the respondent in the capital stock, profits, or transactions of these three companies and whether or not the charges or allowances paid or made by respondent to them were unreasonable and excessive. The contracts and agreements with these three companies relate to the leases to the Phoenix Company of respondent's marine repair yard at Weehawken, N. J., 13 steam tugs, and 5 steam lighters; the arrangement with the Phoenix to perform all work incidental to the shifting and transferring of freight for respondent in New York Harbor; and in addition thereto, repairs to respondent's floating equipment by the Hudson, Phoenix, and International.

Summary

While the record does not contain all data necessary for an exact computation in dollars and cents of the total loss incurred by respondent by reason of excessive expenditures resulting from the lease and operation of the marine-yard equipment, tug boats, and steam lighters, the facts set forth herein with respect to rental, repairs, wages, shifting, free coal, and comparative costs of operation are no less conclusive as to the improvident and improper character of the arrangement. The record, however, does show the following specific items which resulted in loss to respondent and gain to the contracting companies and the approximate extent thereof.

Deducting taxes, which were borne by respondent, the rental of \$12,300 per annum for the marine repair yard yielded a return of 1.78 per cent per annum on the appraised value of the property. Respondent's contention that land under water appraised at \$336,978.68 should not be considered of value to the Phoenix is without merit because this space was of necessity used by the Phoenix Company as a base for its operations and for mooring floating equipment while making repairs thereto. Assuming 6 per cent to be a fair return on the total value of the repair yard the return would have been \$31,240.07 or an increase of \$21,961.07 per annum over the net rental received, a total for the four years three months' period of \$93,334.55.

The failure of respondent to render bills and the delay on the part of the Phoenix to pay the marine-yard rental for over two years following possession of the repair plant, computed on the basis of 6 per cent per annum, resulted in a loss to the respondent of at least \$3,748.80.

The terms of the lease required the Phoenix to "man, maintain and operate" the first group of seven tugs at its sole expense. Nevertheless, respondent during the guaranty period paid the Phoenix Company for repairs to six of the seven tugs the sum of \$25,815.63. Because of insufficient insurance, respondent also paid for repairs to damaged tugs \$6,520.30.

The first tugboat lease required the Phoenix Company to perform without extra charge all shifting incidental to the placing of barges and lighters for loading and unloading and shifting same from pier to pier. Respondent, by interpretation and modification of this provision, paid for 6,094 incidental shifts at towing rates, when not obligated to do so under the lease. During the first year of the lease respondent paid in excess of the amount due \$76,859.50. For the period of four years three months on the same basis this would amount to \$326,652.87.

The above shifting service does not include the shifting at Edgewater coal dock which is treated separately in this paragraph. Comparing six months of 1919 with a like period in 1920, the tonnage shifted decreased 22.2 per cent, while the cost of this service increased in 1920 86.2 per cent, or an excess of \$28,932.78. This amount of excess covers a period of six months. For the entire period of four years three months this would be \$245,852.13.

Coal was furnished by respondent without charge to the Phoenix Company for tugs operated by the Phoenix to the amount of \$56,012.77.

Repairs were made to three of respondent's car floats at the Hudson plant during the period under review. The repairs to two of these units, Nos. 1699 and 1799, respectively, are outstanding with respect to cost. The cost of repairs to the two floats in question totaled \$254,516.12.

The record shows that these units could have been reproduced in 1920 for \$107,214.98. This represents improvident expenditures of at least \$147,301.14.

Respondent received a rental of \$199,989.67 for 13 tugs, 5 steam lighters, and the marine repair yard during the period covered by this investigation. During the same period respondent paid to the Phoenix \$593,883.95 for repairs to its equipment made at the marine yard and \$3,100,354.25 for towing and shifting. The record does not disclose the portion of this amount which represents profit. However, the record does show that the daily average earnings per tug during a certain period were \$317.82. The average daily cost to respondent for repairs, supplies, and manning for the six months' period prior to the tug lease was \$127.40, and the daily rental received was \$7.98. This shows a net profit to the Phoenix of \$182.44 per tug per day, or over 57 per cent of the gross earnings. If we apply this ratio of profit to the \$3,100,354.25 which respondent paid to the Phoenix Company for towing and shifting, approximately \$1,700,000 represents profit.

The son of respondent's president was for a period in respondent's employ, and later became a director in the Chicago & Erie, one of the important subsidiary companies of respondent's system, serving in that capacity from July 22, 1921, to September 5, 1923. Thereafter he was a director in another of respondent's subsidiary companies, the New York, Susquehanna & Western, which official position he still held at the time of the hearings in this proceeding.

During his official connection with respondent's system, and for several years prior thereto, he was a heavy stockholder in and actively connected with the companies having leasing and repair contracts with respondent, to wit, the Hudson Company, the Phoenix Company, and the International Company of New York. The latter company was absorbed by the Hudson in 1919. He was superintendent of the Hudson from December, 1918, and later became vice-president and director. He was vice-president and director of the Phoenix Company. He was also vice-president and director of the absorbed International. During the period covered by this investigation, respondent paid the following sums to these companies for repairs to its floating equipment:

	1921	1922	1923	Total for 3 years
Hudson company....	\$174,484.32	\$135,319.32	\$221,869.24	\$531,672.88
Phoenix company....	202,055.87	169,876.19	221,951.18	593,883.24
Total	\$376,540.19	\$305,195.51	\$443,820.42	\$1,125,556.12

In addition respondent paid \$3,100,354.25 to the Phoenix Company for towing and shifting, making a total of \$4,225,910.37 paid to these companies by respondent during the period covered by this investigation.

The repair of locomotives and cars by the Hudson Company involving large additional payments was the subject of a former investigation. See 93 I. C. C. 646.

We are authorized by the act to inquire into the management of all common carriers subject to its provisions and are directed to keep ourselves informed as to the manner and method by which the same is conducted. In the exercise of our power to prescribe rates which will yield a fair return we must also satisfy ourselves with respect to the honesty, efficiency, and economy of management. We can not, therefore, disregard transactions such as these which, made under the circumstances and conditions herein described, are not only in conflict with "honest, efficient, and economical management and reasonable expenditures for maintenance" but are repugnant to sound business methods and in some cases at least repugnant to good conscience.

Section 10 of the Clayton Act provides in part that no common carrier engaged in commerce—

shall make or have any contracts for construction or maintenance of any kind, to the amount of more than \$50,000, in the aggregate, in any one year, with another corporation, firm, partnership or association when the said common carrier shall have upon its board of directors or as its president, manager or as its purchasing or selling officer, or agent in the particular transaction, any person who is at the same time a director, manager, or purchasing or selling officer of, or who has any substantial interest in, such other corporation, firm, partnership or association, unless and except such purchases shall be made from, or such dealings shall be with, the bidder whose bid is the most favorable to such common carrier, to be ascertained by competitive bidding under regulations to be prescribed by rule or otherwise by the Interstate Commerce Commission.

The fact that the Chicago & Erie and the New York, Susquehanna & Western, although integral parts of the Erie system, are separate corporations may technically avoid the above provisions of the Clayton Act but the transactions herein set forth are no less reprehensible.

THE WORLD MOTOR TRANSPORT CONFERENCE this year will be held in London on November 14-16. On November 17 the delegates will visit the Commercial Motor Transport Exhibition which opens on that day. Topics to be discussed include: Road construction and improvement; motor transport as a developer of world resources; necessity of co-operation between road and rail transport; development of motor vehicles for bad roads and cross-country use; improvement of facilities for international road travel; and motor transport fuel.

A New English Express Locomotive

Great Western 4-6-0 type develops 40,300 lb. tractive force — On exhibit at Baltimore this fall

AN order of 20 of what are considered to be the most powerful express passenger locomotives on the British Isles are under construction by the Great Western Railway of England at its Swindon Works. These locomotives, which develop a tractive force of 40,300 lb., are of the four-cylinder simple, 4-6-0 type. They are of particular interest in America at the present time because one of them will be sent to the United States to be on exhibit at Baltimore, Md., during the Baltimore & Ohio centenary and pageant to be held at Baltimore September 24 to October 8, 1927.

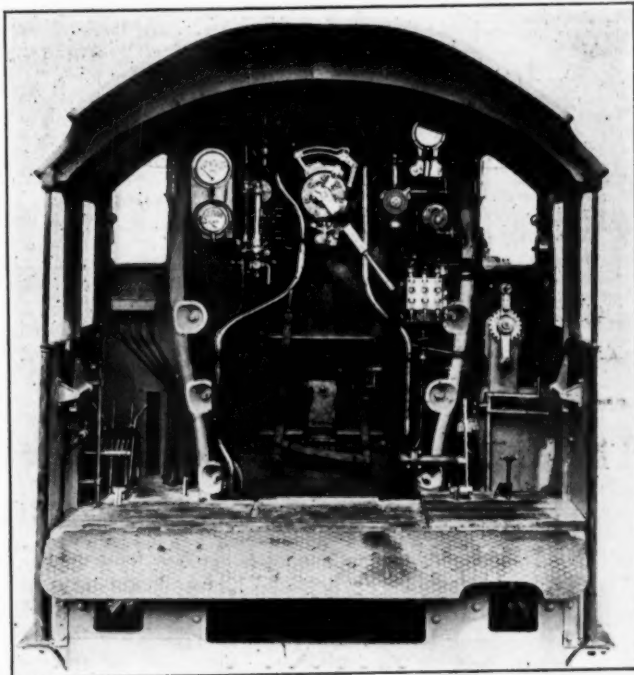
The boiler of the new locomotive is designed for a working pressure of 250 lb. It is of the Belpaire type with the inside firebox of copper and with copper stays to the outside casing. The barrel, which is conical in form and in two courses, is 16 ft. long and is built without a dome. Steam is collected through an open pipe at the highest point over the firebox. The safety valves are mounted on the barrel. The boiler includes a Swindon type superheater and is fitted with top feed, the water being led through pipes in the safety valve casing. It has a total of 2,514 sq. ft. of evaporative heating surface. The firebox is narrow, being fitted between the frames. It is 11 ft. 6 in. long, outside, however, and has 34.3 sq. ft. of grate surface. The frames are of the plate type commonly used in English practice, and, as is customary with this type of frame, the springs are suspended below the driving boxes. In this case the six-coupled wheels are equalized, the equalizers also being placed below the frames.

The engine truck is spring controlled and of a unique design. It has outside bearings on the leading axle and inside bearings on the trailing axle, this arrangement being necessary in order to obtain clearance between the engine truck and the outside cylinders. The four cylinders are not set in a line across the engine. The inside pair are set well forward in the frames under the smokebox and drive on the leading coupled axle, the outside pair driving on the middle pair of coupled wheels.

Steam is supplied to the inside cylinders by piston valves operated directly from the Walschaert gear placed between the frames. The valves for the outside cylinders

are operated by rocking levers from the inside gear. The inside connecting rods have forked back ends fitting with gibs and cotters, while the outside rods have solid bushed ends.

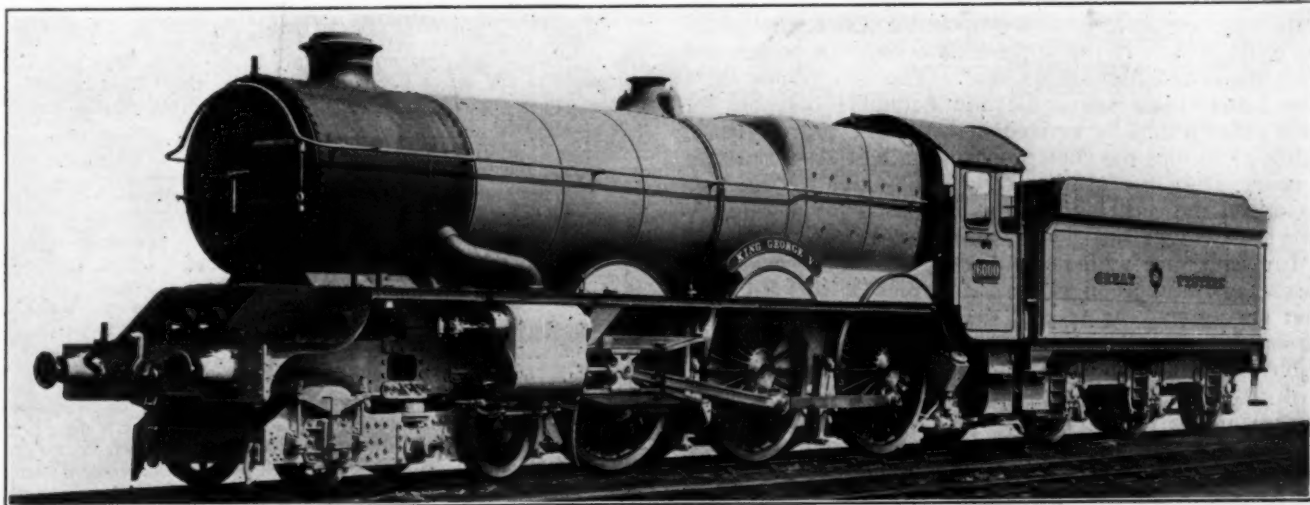
The engine in working order weighs 199,400 lb., of



The Cab Interior

which 151,200 lb. are on the drivers and 48,200 lb. on the engine truck. The tender is of the standard Great Western six-wheel type, equipped with a water scoop, and weighs 104,600 lb. It has a coal capacity of six (long) tons and a water capacity of 4,000 (imperial) gallons.

These locomotives are equipped with equalized vacuum brakes operating on all coupled wheels. The simplicity



The First of the "King" Class Passenger Locomotives of the Great Western (of England)

of the cab interior as compared with the arrangement customarily found on American locomotives is well indicated in one of the photographs.

These locomotives are finished in the same style as that adopted for other express passenger engines of the Great Western Railway, which consists of a bright green color, with polished brass and copper trimmings. They will be known as the "King" class and will bear the names of kings of England. The first to be completed, and the one which, it is reported, will be on exhibit at the Baltimore & Ohio centennial celebration, bears the name of the reigning British monarch, King George V.

A few of the principal dimensions of these locomotives are as follows:

Number of cylinders.....	4
Cylinders, diameter and stroke.....	16½ in. by 28 in.
Weights in working order:	
On drivers	151,200 lb.
On front truck.....	48,200 lb.
Total engine	199,400 lb.
Tender	104,600 lb.
Wheel bases:	
Driving	16 ft. 3 in.
Total engine	29 ft. 5 in.
Total engine and tender.....	57 ft. 5½ in.
Wheels, diameter outside tires:	
Driving	78 in.
Engine truck	36 in.
Boiler:	
Type	Belpaire
Steam pressure	250 lb.
Diameter, first ring, outside.....	66½ in.
Firebox length (outside).....	11 ft. 6 in.
Heating surface	2,514 sq. ft.
Grate area	34.3 sq. ft.
Rated tractive force, 85 per cent.....	40,300 lb.

Through Routes and Joint Rates Via Barge Line Required

WASHINGTON, D. C.

THE Interstate Commerce Commission on July 30 made public its decision on the complaint filed by the Inland Waterways Corporation and related cases, finding that the establishment of through routes and joint rail-barge and rail-barge-rail rates between St. Paul and Minneapolis, Minn., and Fargo, N. D., on the one hand, and points in Illinois, Indiana, Iowa and Missouri, on the other, in connection with the government barge line between Dubuque, Ia., and the Twin Cities, is desirable in the public interest, subject to certain circuitry rules.

The commission also found that the joint rates should be constructed by subtracting from the contemporaneous all-rail rates between the same points differentials equivalent to 15 per cent of the contemporaneous all-rail rates between Dubuque and the Twin Cities. The waterways corporation had proposed a differential of 20 per cent, which is the approximate basis in connection with its lower Mississippi line. The commission also found that just, reasonable and equitable divisions of such rates would be arrived at by a rate prorate basis, using as factors the contemporaneous first-class rail rate between Dubuque or the Twin Cities and the interior point and the contemporaneous first-class barge rate between Dubuque and the Twin Cities.

In accordance with its practice in previous barge line cases the commission entered no order at this time, so that parties may be free to depart from its findings in minor respects where the exigencies of particular situations so require, but stated that substantial compliance with its findings will be expected within 45 days from service of the report.

The case was decided July 28 by Division 4 of the commission, which in this instance consisted of Commissioners Aitchison, Eastman, Esch, Lewis and Mc-

Manamy. Commissioner Aitchison concurred in the result. One of the statements in the opinion is that while doubtless the rates prescribed by the commission must be reasonable, "it does not follow that they must reach the pinnacle of reasonableness."

The report is by Commissioner Eastman. Some extracts are as follows:

The extension of barge-line service to the upper Mississippi river was primarily brought about by business men of the Twin Cities, who, it is testified, became alarmed in 1925 by the possible effect of certain of our decisions finding all-rail rates to the Twin Cities unduly preferential. In the fall of that year the advisory board of the barge line was requested to provide service on the upper Mississippi but it declined, acting upon advice from the Judge Advocate General of the Army that it was without power to provide such service. The Upper Mississippi Barge Line Company was thereupon organized by Twin Cities interests, and they induced the barge line to reconsider and to agree to lease and operate tow boats and barges to be built by that company at a cost of \$600,000, raised by popular subscription. Under this agreement three tow boats of 750 horsepower each, and 15 barges capable of carrying from 300 to 500 tons each, dependent upon draft of water, have been constructed. The barge line now has under construction another tow boat and 45 additional barges for service on the upper river.

The equipment provided by the Upper Mississippi Barge Line Company will afford a service co-ordinating with that on the lower river, and there will be sailings in each direction at intervals of not more than 5 days. The initial tows, it is stated, should consist of not less than six barges, carrying at least 2,000 tons in each direction between the Twin Cities and Dubuque and heavier loads below the latter city.

Through a bond issue the city of Minneapolis has spent \$360,000 for the development of a barge terminal, including a dock and about one mile of railroad track extending from the mouth of the "mill yard" of the Minneapolis Transfer Company to the river. That company has contracted with the city to furnish switching service for a term of ten years. The city of St. Paul has authorized a sale of bonds in the amount of \$450,000 to build a grain transfer and sacking plant, as well as a merchandise terminal near the yard of the St. Paul Belt Terminal Railway. The city of Dubuque has also taken steps to provide a terminal, consisting of a barge wharf and direct rail connection with the Illinois Central Burlington, and Milwaukee and indirect connection with the Great Western.

It is contemplated that the barge line will assume control and management of all these terminals, bearing the cost of maintenance and paving to the respective municipalities a fixed charge of 15 cents per ton on all freight moving over them. Similar arrangements are in effect at ports on the lower Mississippi, and they have been found sufficient, when there is a substantial volume of traffic, to cover interest and carrying charges and to provide an amortization fund as well.

The basis of rates sought by the barge line is similar to that which has been followed in establishing rail-barge and rail-barge-rail rates on the lower river, namely, to make them lower than the all-rail rates between the same points by differentials equivalent to 20 per cent of the all-rail rates between Dubuque and the Twin Cities. The barge line's port-to-port rates are, in general, 80 per cent of the corresponding all-rail rates. The proposed differentials on northbound traffic would range from 3.5 cents on class E to 18 cents on first class and from 2.5 cents to 16.5 cents on southbound traffic. The differentials in representative commodity rates would range from 5 to 12 cents. The present all-rail and proposed rail-barge class rates between Chicago and the Twin Cities are shown in the following table, which will serve to illustrate the general effect of the barge line's proposal:

Class	Northbound		Southbound	
	All-rail (Cents)	Rail-barge (Cents)	All-rail (Cents)	Rail-barge (Cents)
1	98	80	91.5	75
2	83.5	68	76	62
3	68.5	56.5	61	50.5
4	49	40.5	41	34
5	34.5	28.5	30.5	25.5
A	39	32	38.5	32.5
B	32	26.5	30.5	25
C	27.5	22.5	26	21.5
D	22	18	21	17.5
E	19.5	16	20.5	17.5

The barge line qualified its general proposal of a complete line of class and commodity rates by a statement that it does not desire rates on certain low-grade commodities, such as grain and grain products, sand and gravel, stone, coal, cement, and lumber, because differential rates on these commodities would be unremunerative. Also it should be noted that the barge line

proposes no rail-barge commodity rates lower than 20 cents, although somewhat inconsistently, as its proposed class rates are not subject to such a limitation. The territory from and to which the barge line seeks to establish rail-barge rates may be roughly described as lying within an imaginary line drawn through Dubuque, Oelwein, Waterloo, Marshalltown, Des Moines and Diagonal, Iowa, St. Joseph, and Kansas City, Mo., Evansville, Westport, Indianapolis, and West Lebanon, Ind., and Chicago.

Claim Rates Justified

The barge line asserts that the proposed rail-barge rates made differentially lower than the corresponding all-rail rates are justified by the fact that water transportation is generally less costly than rail transportation and also less desirable to the shipper. As barge service on the upper Mississippi was not inaugurated until after the hearings in these cases, the record lacks accurate evidence as to its cost. The barge line shows that on the lower Mississippi in 1925 it hauled 910,755 tons of freight at average receipts of \$3.75 per ton and an average cost, including depreciation, of \$3.59 per ton. Based on an average haul of about 1,000 miles its average receipt per ton-mile on all traffic was 3.75 mills. In contrast with this it is stated that in the same year the railroads as a whole had an average earning of 11.10 mills per ton-mile. The average haul on which the latter figure is based is not stated, but in all probability the average rail haul per ton on traffic handled is much less than 1,000 miles. The principal witness for the barge line stated that the experience of eight years' operation "leads to the conclusion that well-equipped common carriers on such streams as the lower Mississippi River can be profitably operated at one-half the average cost of rail service in the United States," but gives no data to support this opinion. On brief the barge line concedes that with respect to volume of tonnage and character of operation the service on the upper river may be quite different from that on the lower Mississippi.

Manifestly the principal movement under the proposed rail-barge rates would be between Chicago and the Twin Cities, and shippers in both communities testify that the proposed rates, if established, would be used in shipping iron and steel articles, binder twine, petroleum products, and general merchandise. The complainants at Zion, which is 42 miles north of Chicago on the North Western, now ship bakery goods, candy, children's vehicles, and curtains to the Twin Cities, and state that they have competitors at Chicago who would be unduly preferred if rail-barge rates should be established from Chicago but not from Zion. The all-rail rates from Zion to the Twin Cities are the same as those from Chicago. This complainant also asks for rail-barge routes via Clinton, Iowa, but no interchange facilities at that point are contemplated.

The intervening and defendant rail carriers, with the exception of the Illinois Central, are wholly averse to participating with the barge line in through routes and joint rates, particularly in differential rates. Most of them have singleline routes of their own between Chicago and the Twin Cities, and they urge that they can ill afford to share the traffic with the barge line. They point out that there are the equivalent of nine reasonably direct all-rail routes between Chicago and the Twin Cities capable without an increase in their facilities of handling from 25 to 100 per cent more traffic than they now haul, and that these facilities are likely to be adequate to such demands as may be made upon them for many years to come. From this fact they argue that there is no public necessity for additional routes and that we, therefore, have no legal power to order them established. They question the economy of substituting for a rail haul a 250-mile water haul, requiring a breaking of bulk, and express doubt whether barge navigation on the upper Mississippi is physically or commercially feasible. Defendants call attention to the fact that the barge line's haul of 250 miles would actually save a rail haul of only 228 miles, this being the difference between the short-line distance from Chicago to the Twin Cities of 400 miles and the short-line distance of 172 miles from Chicago to Dubuque. The rail lines also urge that their revenues should be protected from the depletion which they fear would result from the establishment of the proposed routes and rates, because of the relatively weak financial condition of the northwestern roads in general.

The position of the defendants in substance seems to be that we are without power to order the establishment of additional through routes where existing routes are capable of handling the traffic, and that such routes can only be ordered on a showing of public convenience and necessity such as is required in the case of the construction of a new line of railroad. With such a narrow interpretation we are unable to agree.

In the opening paragraph of section 500 of the transportation act, 1920, it is declared "to be the policy of Congress to promote, encourage, and develop water transportation, service, and facil-

ities in connection with the commerce of the United States, and to foster and preserve in full vigor both rail and water transportation." This language, we believe, negatives any intent on the part of Congress to restrict the extension of water transportation to regions which can not be adequately served by rail lines. . . .

The record justifies the conclusion that the establishment of rail-barge and rail-barge-rail routes in connection with the barge line between Dubuque and Twin Cities is desirable in the public interest.

Defendants make the point, however, that our power in any event is only to prescribe maximum reasonable joint rates, and that inasmuch as the all-rail rates to and from the Twin Cities are depressed they cannot properly be used as a yard stick for measuring maximum reasonable rail-barge rates.

Upon analysis our power under section 15 (3) is to establish through routes and joint rates "or the maxima or minima, or maxima and minima, to be charged (or, in the case of a through route where one of the carriers is a water line, the maximum rates, fares, and charges applicable thereto)." The quoted provision is an alternative to the preceding provision, which empowers us to establish through routes and joint rates without specifying that the latter must be on either a maximum or a minimum level. Doubtless the rates prescribed must be reasonable, but it does not follow that they must reach the pinnacle of reasonableness.

Passing then to the question of the measures of the differentials which should be established, while the record is admittedly lacking in any reliable evidence as to cost of barge transportation on the upper Mississippi, there is abundant evidence that the value of the proposed rail-barge and rail-barge-rail service will be appreciably less than that of all-rail transportation and that the rates should, in some degree at least, reflect this difference. The barge line states on brief that we have approved the so-called 20 per cent differential for use on the lower Mississippi, but this statement is not entirely correct. The existing through barge-rail and rail-barge-rail rates were largely established by the Director General of Railroads or voluntarily by the carriers. In the first barge-line report, 77 I. C. C. 317, we did not undertake to say what additional through routes and joint rates in particular should be established, and stated that so long as the barge line bore the burden of the differential it might be given considerable latitude in fixing the amount, although we pointed out at page 363 that under "the proposed plan, which makes the differential in all cases 20 per cent of the all-rail port-to-port rates, the results would often be incongruous and in some cases in violation of the fourth section." In a subsequent report, 92 I. C. C. 528, we ordered the establishment of joint rail-barge-rail rates on sugar, based on a differential of 9.5 cents via St. Louis or Cairo, Ill., although the barge line favored one of 10.5 cents, derived from its 20 per cent rule.

Improper Differential

Taking account of the fact that the barge haul under the proposed rates is shorter than that which the barge line generally performs in connection with rail-barge routes on the lower Mississippi and of the general level of the all-rail rates on which they would be based, we are of opinion that the so-called 20 per cent basis of differentials would here be improper and that we would not be justified in approving differentials greater in amounts than 15 per cent of the all-rail Dubuque-Twin Cities rates.

Upon consideration of the evidence relating to divisions we are of opinion that the first-class rate prorate basis affords the only fair and practicable method of dividing the joint rates here under consideration. The only objections on the part of defendants to that basis are of a general nature, as they express opposition to any method which would not give them the same revenue as their local rates. They do not contend that the factors proposed for this prorate fail to reflect the respective services performed by the barge line and the rail carriers. In this connection it should be recalled that the southbound all-rail class rates from the Twin Cities to Dubuque, on which the barge rates are based, appear to be subnormal and that both the northbound and southbound Dubuque-Twin Cities rates are lower than rates for the same distance under the scales recently proposed by the carriers in western trunk-line territory. It will be noted that in illustrating this basis it has been assumed that the Twin Cities-Dubuque barge rates would be 80 per cent of the all-rail rates, notwithstanding the fact that we have found a differential of 15 per cent thereof proper for rail-barge and rail-barge-rail rates.

Use of a factor for the barge line based on 80 per cent of the all-rail rates seems equitable under all the circumstances for the purpose of fixing divisions, even though the differential has been based on a different percentage.

Illinois Central Builds Large Shops at Paducah

*New locomotive and car facilities replace all
units of old repair plant
at same point*



A View of Some of the New Facilities Looking North—Power Plant at the Right, Paint Store at the Left, and Riveting Tower of the Boiler Shop in the Background

THE Illinois Central is now completing large locomotive and car repair shops at Paducah, Ky., replacing the old Paducah facilities which comprised one of several plants maintained on the system for heavy repairs. Originally, all general overhauling of equipment was done at the Burnside (Chicago) shops, established in 1893, but when these were no longer of adequate capacity to serve the entire system, other plants were established and with the growing importance of the lines of the Illinois Central tributary to Paducah and the increase in the size of locomotives the shops at that point also became inadequate. A further consideration which exerted an influence in their replacement was the need for a thoroughly modern plant, in which heavy repair operations could be carried on with the greater efficiency that is possible only with the aid of high grade tool equipment. A complete complement of modern machine tools, therefore, comprises an important feature of the new installation.

The shops and their service tracks occupy 82½ acres of land, of which 60 acres represent property purchased to supplement the area occupied by the old facilities, all of which were removed to make room for the new buildings. The new Paducah shops are divided into three main departments, with some buildings common to more than one department. The buildings for the locomotive department are a locomotive erecting and machine shop, a boiler shop, a blacksmith shop with coal and coke bins, a tank and paint shop, a pipe, tin and electric shop, a carpenter and paint shop, and a flue shop. The car department group consists of a wheel

shop, a wood mill building and a paint shop and waste vat. The store department group includes a storehouse with covered platform, an oil and paint store, an iron shed, a brass foundry, a tractor garage and a finished lumber shed. There are in addition to the above, a power house, an office building, and various wash, locker and toilet buildings which are common to more than one department.

As seen on the general plan, the shop yard occupies a plot of ground, roughly triangular in shape, bounded on two sides by city streets and on the third side by the engine terminal and terminal lead tracks. The width of the shop grounds is divided about equally between the locomotive and car repair facilities, the locomotive shops occupying the east portion and the car repair yard, lumber yard and wood mill the west portion. The stores' buildings and material storage areas are located in approximately the center of the layout for convenience of delivery service to all parts of the plant.

The principal buildings of the locomotive facilities, namely the locomotive shop, the boiler shop and the tank and paint shop, are large structures of nearly equal length placed with their main axes east and west or at right angles to the approach tracks leading to them. Located in the areas between these approach tracks with their longitudinal axes north and south are the power house; the carpenter and paint shop; the tin and pipe, air brake and electric shop; and the main stores building. The blacksmith shop is located west of the locomotive and boiler shops, and as it is also placed with its main axis north and south it is accessible to both.

Special attention has been given to the storage and handling of materials and scrap. The main storage space for heavy shop material is served by a craneway 80 ft. wide and 2,500 ft. long, extending north and south through the central portion of the shop grounds adjacent to the store and oil house and between the car and locomotive shops for convenience in delivery of material to each group of shops. Two 20-ton traveling cranes operate on this craneway.

A transverse craneway served by a 20-ton crane extends east from the main north and south craneway through the open space between the tank and paint shop and the buildings to the south of it. This transverse craneway is at a lower elevation than the longitudinal craneway and extends into the area occupied by it, thereby facilitating the transfer of loads from one craneway to the other.

Locomotive Shop of Transverse Type

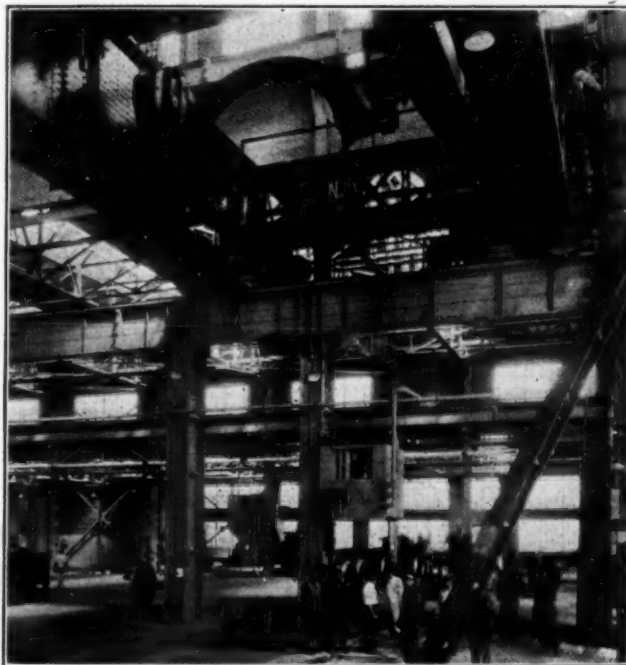
The locomotive shop, which is of the transverse type, has a length of 681 ft. and a width of 245 ft. and is divided into the usual erecting, heavy machinery and light machinery bays, having clear widths of 95 ft., 80 ft. and 65 ft. respectively. The erecting bay is served by a gap crane of 250 tons capacity operating on a runway 36 ft. above the floor, and two 15-ton messenger cranes on a runway 50 ft. above the floor. The heavy machinery bay is served by two 15-ton cranes while the light machinery bay is equipped with monorail hoists and jib cranes.

The erection shop is provided with 27 tracks, of which one serves as the receiving or stripping track and another as the assembly track. Three of the remaining 25 tracks are continuous with tracks in the adjacent boiler shop for the convenient transfer of boilers. Ample wash, locker and toilet facilities adjoin the building. These are equipped with separate lockers for each man and with shower baths and ample toilet facilities.

The boiler shop has a length of 624 ft. and a width of 165 ft. and is divided into two bays, each with a clear width of 80 ft. One serves as the erection shop and the other as the machine shop. The erecting bay is served by a 75-ton gap crane and the machine bay by two 15-ton cranes. The rails on the runway for the 75-ton crane are 21 ft. 6 in. above the floor and those for the 15-ton cranes are 29 ft. above the floor. The bottom chords of the roof trusses in both bays are 36 ft.

clear of the floor and the building is of uniform height throughout its entire length except that two of the transverse panels near mid-length are surmounted by a riveting tower covering the full width of both the erecting and machinery bays and having a height of 88 ft. to the under side of the roof trusses.

This tower has an unobstructed width of 48 ft. from



In the Erecting Bay of the Locomotive Shop, Looking Toward the Machine Bays—One End of the Gap Crane Overhead

the floor to the roof trusses for its entire length of 165 ft., except where the runway for the two longitudinal craneways is carried through it. Where the height is sufficient so that the longest boiler can be lifted over the craneway from one bay to the other. The tower is served by a 25-ton crane crosswise of the building on runways 81 ft. above the floor, the crane being operated by remote control from the platform of a large bull riveter.



Interior of the Blacksmith Shop

The erecting bay has 25 transverse tracks, three of which are continuous with pit tracks in the locomotive shop. Wash and locker facilities, similar to those in connection with the locomotive erecting shop adjoin this building and are used jointly by the workmen in this shop and in the tank and paint shop.

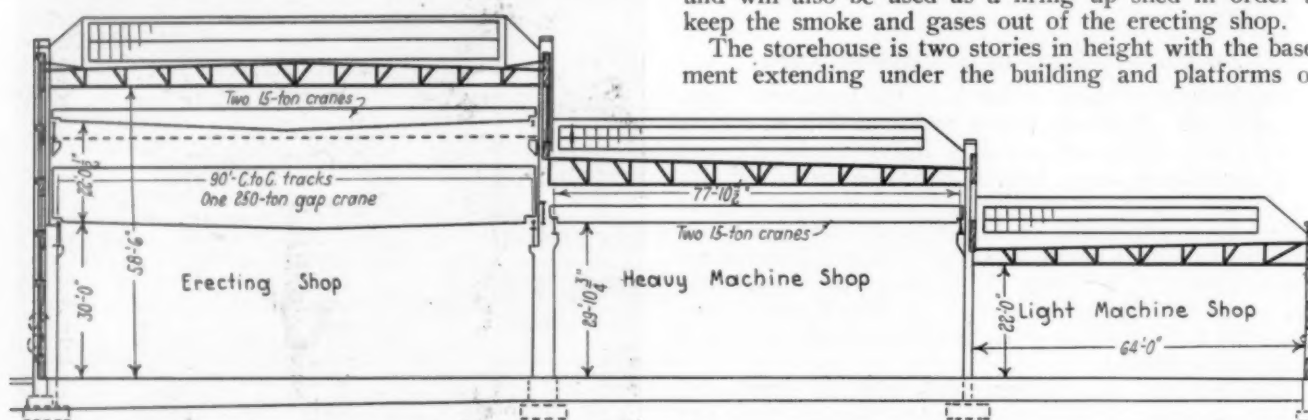
The tank and locomotive paint shop, 100 ft. wide and 624 ft. in length, is divided into two sections by a transverse partition wall. The west section containing 13 tracks is used for the tank shop, while the east section containing 12 tracks is used for the locomotive paint shop. The building is served by a 50-ton overhead crane which operates the entire length of the building, the upper part of the partition being hinged at the roof so that it can be opened to permit the passage of the

after cleaning, the flues are dumped automatically on skids directly into the flue shop.

The iron storage portion of this building is served by a 10-ton traveling crane spanning the entire building with the craneway extending beyond the end of the building, thus permitting the crane to run out over the platform and tracks located outside. The iron storage space is equipped with adjustable racks for stacking iron plates, pipe, flues, etc.

A locomotive inspection shed, 40 ft. by 140 ft., will be located on a track leading directly to the locomotive erecting shop and adjacent to the tracks leading from the paint shop. This building will be equipped with an inspection pit and will be used to make inspection and tests of the locomotives as they leave the repair shops and will also be used as a firing up shed in order to keep the smoke and gases out of the erecting shop.

The storehouse is two stories in height with the basement extending under the building and platforms on

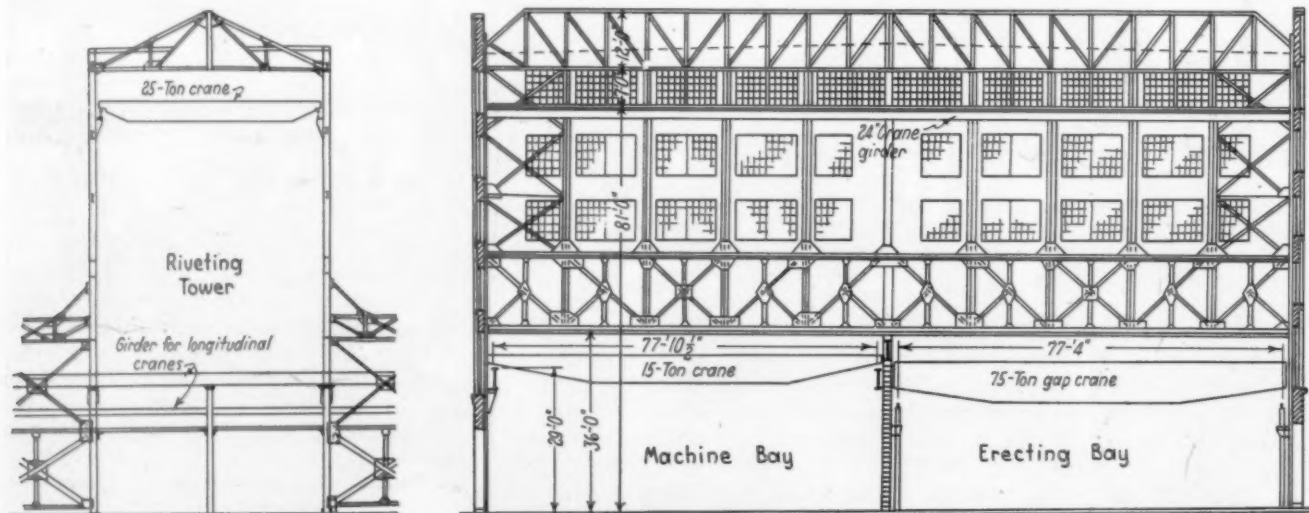


Cross Section of the Locomotive Shop

crane from one room to the other. By this means, the tanks can be carried directly into the paint shop. Seven of the tracks of the paint shop are connected directly to the outside storage tracks.

The flue shop occupies a length of 48 ft. in the north end of a building 84 ft. wide by 247 ft. long, the remaining and larger portion of which is devoted to iron storage. The flue shop portion is served by a traveling crane on which a $7\frac{1}{2}$ -ton Shepherd hoist is operated. A bridge crane is arranged to make connections with an outside monorail system extending over the flue storage racks and under the main material yard craneway. A submerged flue rattler with a capacity of two sets of flues is located outside of the east end of the building under the outside craneway. It is so arranged that

each side. The oil and paint store is in a separate building connected with the storehouse by covered platform. This building is one story in height with the basement under the oil store room. This group of buildings and platform occupy a space 67 ft. by 622 ft. and have a combined total floor area of 86,638 sq. ft. The storehouse is equipped throughout with steel shelving and bins. Two elevators, one on each side of the building, connect the basement and first and second floors. The shipping rooms on the first and second floors are also connected by a spiral bundle chute for handling small packages. Inclined ramps lead from the street level directly into the basement and up to the platform so that tractors and trucks can be brought into the building. The oil and paint storehouse is equipped



Transverse and Longitudinal Sections Through the Riveting Tower of the Boiler Shop

with large storage tanks in the basement and with modern hand-operated oil pumps, motor-driven barrel-filling pumps and handling facilities and with an overhead monorail system for handling waste, etc. All materials are delivered by the store department throughout the shops with trucks and trailers and special side-car motorcycles.

The brass foundry, 67 ft. by 99 ft., is located south of the storehouse adjacent to the main craneway. In addition to the brass furnaces and molding equipment, this building contains the pattern shop and the pattern storage room.

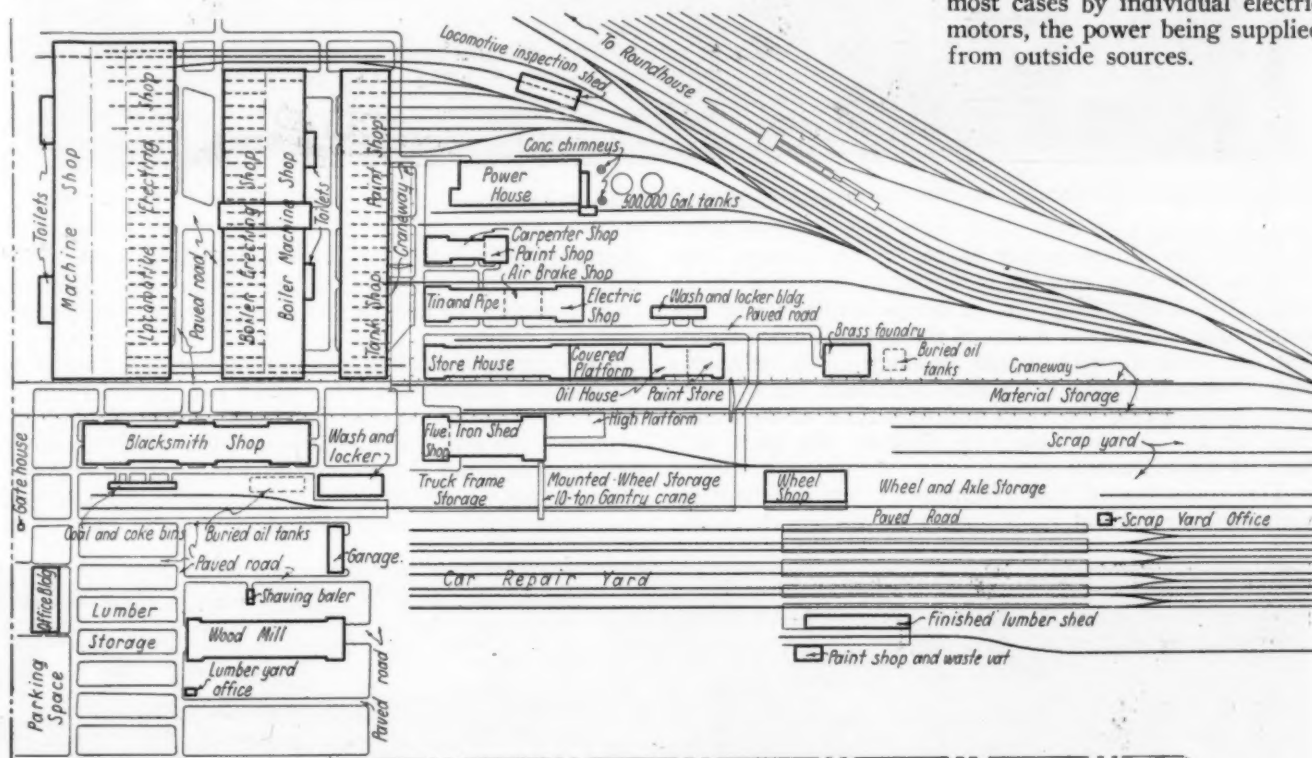
The car repair tracks are located in the westerly portion of the grounds, south of the lumber yard and mill building and adjacent to the wheel shop, which is 72 ft. by 169 ft. There are eight tracks, each 1,400 ft. long, spaced from 19 to 24 ft. apart. Space is available west of these tracks for a similar group of repair tracks. The mill building, which is 84 ft. by 315 ft. in area, is

eter of 12 ft. and a height of 265 ft. is provided for each battery.

The boilers are fed by automatic stokers from overhead coal bunkers which have a total capacity of 1,000 tons. The coal is dumped from the cars directly into a track hopper whence it is carried by a flight conveyor to a pivoted bucket conveyor which elevates the coal and distributes it to the bunkers. The ashes from the boilers are loaded into carts and raised by an elevator and dumped automatically into a large ash storage bin located over the adjoining tracks from which they are spouted directly into cars.

The engine room contains two steam-driven and one electric-driven air compressors with a total capacity of 11,000 cu. ft. of free air per min. Provision has been made for the installation of an additional 5,000 ft. electrically-driven unit. This room also contains the necessary service pumps, fire pumps, switchboards, etc. and a 15-ton service crane. The machines throughout

the shop are to be operated in most cases by individual electric motors, the power being supplied from outside sources.



General Plan of the New General Repair Shops at Paducah, Ky.

adjacent to the lumber storage yard. The arrangement of the machinery in the building is such that the material enters the mill at the north end and travels through the machines in one direction in a continuous movement, leaving the building at the south end ready for use in cars on the repair track close by.

The paint store and waste vat is located between the two groups of repair tracks adjacent to where the painting will be done. This building is provided with stencil-cutting tables and racks with a waste-soaking vat for the preparation of packing and with provision for mixing and storing paints.

A building, 92 ft. by 343 ft. in plan and with a maximum height of 83½ ft., houses the power plant. The boiler room has been equipped with two batteries of three boilers each, that will develop a total of 5,172 hp. However, space is provided for two more boilers in each battery, which, when added, will raise the boiler capacity to 8,620 hp. A smoke stack having an inside diam-

The office building, located at the entrance to the shop grounds, is 55 ft. by 136 ft., two stories high with basement. In addition to the necessary office space for officers, clerks and draftsmen, as well as for files and vaults, it contains an employment office, an assembly room for the use of the shop craft organizations, rest rooms, locker rooms and toilet facilities.

Uniform Architectural Treatment

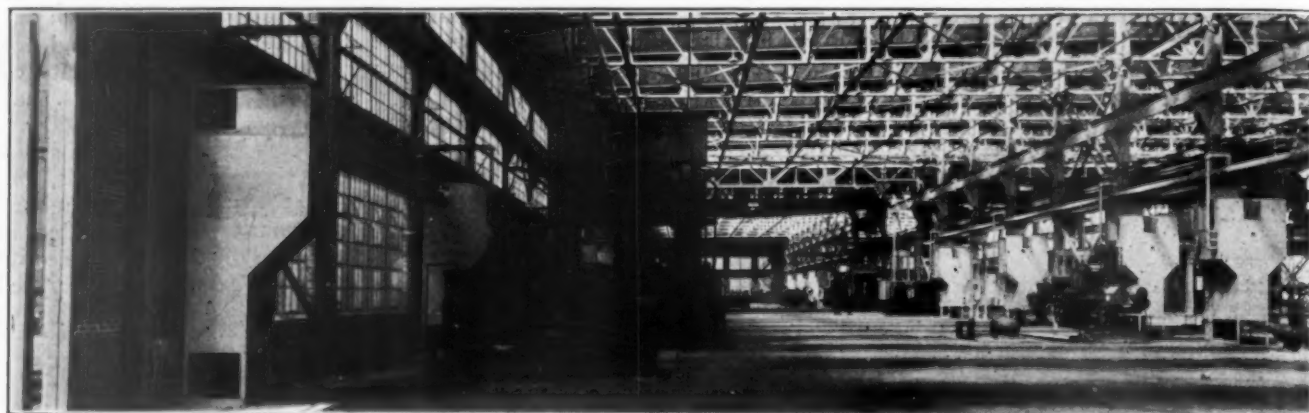
In the design of the buildings consideration was given to utility, structural design and architectural effect, in the order given. The same general treatment was followed throughout and has resulted in a uniform appearance of all the buildings that is very pleasing. All of the buildings, with the exception of the finished lumber shed and the coal and coke bins have steel or reinforced concrete frames with brick walls, steel sash and concrete tile roofs.

Various types of floors were installed in the shops.

Creosoted wood blocks on a concrete base were used in the locomotive shop; boiler shop; tank and paint shop; tin, pipe and electric shop; carpenter and paint shop; wood mill building; and the pattern shop in the brass foundry. Asphalt blocks on a concrete base were used in the wheel shop. Tamped cinders on sand fill were used in the blacksmith shop, coke and coal bins, the finished lumber shed and the brass foundry. Concrete floors were applied in the storehouse, oil and paint store and adjoining platforms, paint shop and waste vat, wash

equipped with automatic temperature control apparatus.

An extensive system of railroad tracks has been laid throughout the shops to facilitate delivery of material and the distribution and storage of cars and locomotives. In addition to the tracks and crane service a comprehensive system of concrete roads is provided for the handling of material by tractor and trailers to all parts of the shop. The importance attached to inter-shop transportation is indicated by provision for a tractor garage, 30 ft. wide by 63 ft. long with facilities for



The Machine Bay of the Boiler Shop

and locker buildings, power house, tractor garage, iron shed and flue shop, and the basement of the office building. All of the offices in the shop buildings and the entire first and second floors of the general office building are covered with maple flooring. The windows and skylights in all of the shop buildings are of wire glass and those on the south and west sides of the buildings are of "Actinic" glass to eliminate the glare and heat of the afternoon sun.

The roofs are of "A" frame, monitor construction with the monitors at right angles to the length of the

charging and repairing storage batteries, as well as for housing tractors and trucks serving the shop grounds. It is centrally located on the main east and west roadway and convenient to all sections of the grounds.

In order to use the 60 acres of land acquired for shop purposes it was necessary to build a 6-ft. by 7-ft. culvert 2,957 ft. long to confine a stream which crossed the property. It was also necessary to place 700,000 cu. yd. of filling to bring the ground level to established grade. The nature of the ground is such as to demand pile foundations for all structures, 12,500 cedar piles aver-



In the Heavy Machine Bay of the Locomotive Shop

buildings, thus providing ample roof lighting. All of the monitor and upper side wall sash that can be opened for ventilation are operated by electric motors controlled from conveniently-located switches.

Direct radiation is used for heating the office building, the heat in the various rooms being maintained at even temperatures by automatic temperature control. Direct radiation is also used for heating the various wash and locker facilities and spaces set aside for offices in the shop buildings. The shop buildings are heated by unit heaters, each of which is

aging 22½ ft. long being required. Pile driving was started on April 1, 1925, followed by the erection of the first steel work in August of that year, 10,000 tons of structural steel having been placed to date. The office building has been completed and occupied for a year and 14 of the shop buildings are now ready for occupancy and the machinery and mechanical equipment is rapidly being installed.

The installation of all machinery and mechanical piping in connection with it and the construction of the power distribution lines between the buildings is being

handled by the mechanical department under the general supervision of R. W. Bell, general superintendent motive power and under the direct supervision of Lee Robinson, shop engineer and his assistants. All of the engineering and building work is under the general supervision of A. F. Blaess, chief engineer and under the direct supervision of Frank R. Judd, engineer of buildings.

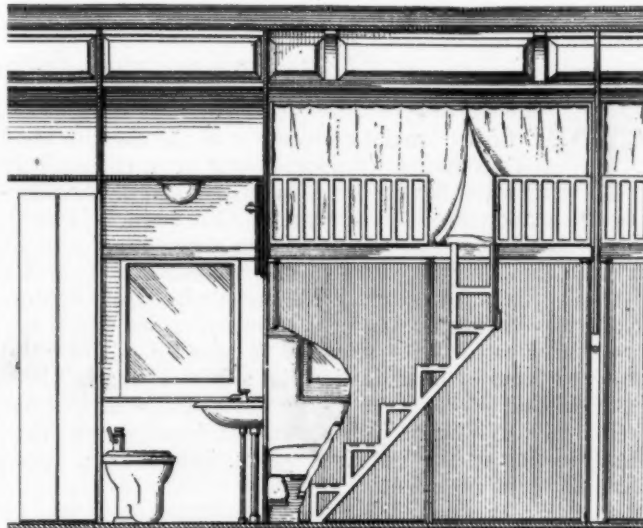
Proposed Sleeping Car Designed for Maximum Comfort

WITH the purpose of increasing the comforts and conveniences of sleeping cars, Mrs. A. R. Rossman, 1012 Park avenue, Plainfield, N. J., has developed several features of interior arrangement and equipment.

The design provides for the conversion of the interior of a 16-section, 83-ft. sleeping car into 10 sections, each with a lower and upper berth, with two windows in each upper berth. The lower berths are used for seats for day travel. In addition, 10 dressing rooms are provided for use in connection with the lower berths; 10 double luggage closets above the dressing rooms are provided for use in connection with the upper and lower berths, and one narrow width section, consisting of two single seats for day travel and a narrow lower and upper berth when made up. There is a shower bath connecting with the dressing room at each end of the car.

The 10 dressing rooms have been designed for the comfort and convenience of the occupants. Each room will be provided with two windows, seats for four passengers, water cooler of the vacuum non-breakable type; sanitary toilet; an especially designed wash basin with a folding table to give it the appearance of a writing desk when not in use; individual ventilation and heating unit; radio receptacle for connecting a head set, detachable table with socket attachment, means for lengthening the lower berth for tall passengers, and a "shoe bin" on the

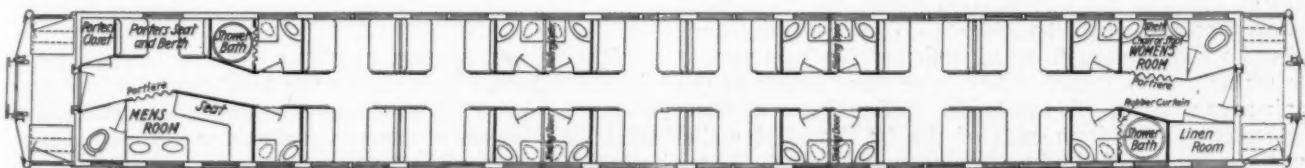
tilation are to be eliminated in each section by the installation of electric ventilating heating units that change the air every four minutes, supplying fresh air from the outside. The amount of air blown in or exhausted is controlled by the passenger. The radiator is connected to the car heating system so that the temperature can



The Berths Made Up for Occupancy Showing the Dressing Room Facilities

be regulated at the will of each passenger. Continuous movement of air over the open section seats and over the upper berth at night is secured by admitting air from the "set" through suitably located apertures. Each upper berth is provided with two windows that aid in the circulation of air.

The lower berth passenger has the use of one of the double luggage closets over the dressing room with the door opening into the aisle. The upper berth passenger has the use of the other luggage closet over the dressing room which has doors opening into the aisle and also a door opening into the upper berth.



Proposed Design for Converting a Standard 16-Section 83-ft. Sleeping Car into a Car with 12 Sections, with a Dressing Room for Each Lower, and Two Shower Baths

back of the aisle door which, when not in use, can be folded up flush with the surface of the door.

The usual curtain that is used when the lower berth is made up has been replaced by a two-part flexible steel curtain that rolls on two rollers, one located at each end of the berth. The curtains, which meet at the middle of the berth, can be locked from the inside. The upper berth is provided with a guard rail with a gate at the middle. The upper berth has tight fitting curtains independent of the lower berth, fastened inside. The flexible curtain and guard rail eliminates the possibility of the occupants falling out.

Entrance is gained to the upper berth by a collapsible ladder that may be folded up so as not to obstruct the aisle when not in use. The ladder and the guard rail are put inside of the upper berth when made up for day travel.

Dirt, smoke and drafts from windows and poor ven-

Such accessories as the sanitary equipment, berth curtains, seats and berths, and the ventilating equipment are said to have already been designed by manufacturers of such equipment.

Tucork Mineral Insulation

AN insulation designated as Tucork for use on refrigerator and passenger cars has been placed on the market by the Tuco Products Corporation, 30 Church street, New York. It has all the characteristics of natural cork in the field of insulation, but being entirely mineral remains as a permanent and integral part of the construction. It is not subject to disintegration or decay and is water repellant. In addition to its insulation value, it is also an excellent sound deadener.

B. of L. E. Divorces Financial Activities

Triennial convention at Cleveland pledges assets to support bank and restores former plan of organization

THE fifth triennial convention of the Brotherhood of Locomotive Engineers came to an end on July 22 after having been in session at the brotherhood's headquarters in Cleveland, Ohio, since June 6. The most important action of the convention was to divorce the labor activities of the organization from its extensive financial affairs. This result has been accomplished by restoring the form of organization which existed prior to the 1924 triennial convention. Under the restored form of organization the affairs of the brotherhood will be in charge of a grand chief engineer assisted by an advisory board in place of the form of organization existing in the last three years, headed by a president and vice-presidents.

The organization has placed its financial affairs, as reported in an article in the *Railway Age* of July 16, page 97, in the hands of a board of three trustees who are to report to a Committee of Nine. Alvanley Johnston, grand chief engineer, is to vote the majority stockholdings of the brotherhood in the Brotherhood of Locomotive Engineers Co-Operative National Bank. He has been authorized to increase the board of directors of the bank from 9 to from 15 to 20 members, none of whom henceforth, except for the grand chief engineer, may be members of the brotherhood, but who are expected to be Cleveland business men.

Because of a complaint made by the comptroller of the currency that the assets of the bank were not sufficiently liquid, the convention voted to pledge the assets of the organization to guarantee the deposits of the brotherhood bank with the proviso that this guarantee will last only as long as the brotherhood maintains its present majority control of the bank stock. The convention considered various plans to raise sufficient funds to permit the separation of frozen assets from other assets of the bank organization. A resolution, calling for a monthly assessment of \$5 from each of the 60 thousand active members for a period of two years, was adopted. Later the convention adopted a plan to dispose of 100,000 certificates of deposit in units of \$100, bearing interest at 4 per cent which, it is hoped, will be sufficiently successful to avoid the drastic action of an assessment.

In the reversion of the plan of organization to that existing prior to the 1924 triennial convention, Alvanley Johnston was re-elected grand chief engineer by acclamation and placed in entire charge of the affairs of the organization. Assisting Mr. Johnston is a first assistant grand chief engineer, T. J. Bissett, formerly assistant grand chief engineer, and the following nine assistant grand chiefs: A. O. Smith and G. W. Laughlin, elected at the 1924 convention for six-year terms, will complete their terms; R. A. Edrington, R. H. Cobb, O. K. Hedges, and W. A. Paddock, were re-elected, these four having been appointed assistant grand chiefs at various times during the past few months to fill vacancies. New assistant grand chiefs elected were G. W. Burbank, former general chairman, Southern Pacific, Pacific System, E. H. Kruse, for several years organizer for the grand division, and J. A. Emerson, former general chairman of

the Central of Georgia. James H. Cassell, for many years connected with the grand division office in various capacities, was elected grand secretary-treasurer.

The most striking event of the convention was the dismissal of the president, first and second vice-presidents and the secretary-treasurer on charges of "laxity, carelessness and indifference" in the conduct of organization affairs. These officers included W. B. Prenter who has been president of the brotherhood and of the Brotherhood of Locomotive Engineers Co-Operative National Bank since the death of Warren S. Stone in June, 1925; L. G. Griffing, first vice-president, and H. P. Daugherty, second vice-president, and C. E. Lindquist, secretary-treasurer. These officers, excepting Mr. Prenter, in addition have been barred from holding office in the organization in the future. This disability against Mr. Prenter was limited to the period intervening between now and the next triennial convention, since he was ill and unable to appear in answer to charges made against him at the convention just closed. It is difficult for an outsider to know whether the charges against these officers are meant to be as severe as the phrasing of them would indicate, or whether they represent more largely an expression of the brotherhood's dissatisfaction with the way the extensive financial and industrial affairs of the organization have been handled. These include the brotherhood's interest in its bank, in an extensive investment organization, in office building property in Cleveland, in coal operations in West Virginia and Kentucky and in real estate developments in Florida.

Origin of Financial Activities

The nucleus of these non-labor activities is to be found in the reserves built up by the brotherhood's insurance department. This insurance department was established in 1868 in an effort to make available to locomotive engineers low rates of insurance which were not available for persons in railroad employment from the standard insurance companies. For many years subscription to this insurance by members of the brotherhood was voluntary; in 1894 it was made compulsory and in 1910 there was established a mortuary reserve of 10 per cent of all collections. The result was to build up large reserves which in 1925 totaled about 6 million dollars and with other assets of the insurance association totaled over 8 million dollars. Included in these assets, however, there is now a loan on a mortgage of the B. of L. E. building in Cleveland and a four-million-dollar loan on the building built by the B. of L. E. bank. The Cleveland office building was dedicated in 1910 and by 1921 was free from debt at which time it was said to have a value of about three million dollars.

B. of L. E. Co-operative Bank

The Brotherhood of Locomotive Engineers Co-Operative National Bank was established in 1920 with a capital of a million dollars. Dividends on the bank stock were limited to 10 per cent, profits in excess of that

amount going to the depositors. Dividends have been paid regularly since. A controlling interest in the bank was held by the brotherhood and the remainder was placed largely with the brotherhood members. The officers were: President, Warren S. Stone, at that time grand chief engineer of the brotherhood; vice-president and cashier, W. B. Prenter, at that time first assistant grand chief; and vice-president and manager, W. F. McCaleb who later left the bank to become associated with the Federated Trust Company organized by the Central Trades and Labor Council of New York. The bank expanded its business rapidly and by 1925 had resources of twenty-eight million dollars and is reported at the present time to have resources of about twenty-four million.

As a consequence of its apparent prosperity, the bank built a business block in Cleveland which, however, it had some difficulty in renting and which, in fact, is not yet fully occupied. This building was completed in the latter part of 1925.

The bank, having a charter as a national bank, discovered early in its career that its activities were limited in certain respects and as a result it established the Brotherhood of Locomotive Engineers Holding Company, a million dollar corporation.

Brotherhood Investment Company

In 1921 the brotherhood took the next step in its expanding financial career by establishing the Brotherhood Investment Company with a capital of ten million dollars, the majority of which was held by the brotherhood, and the remainder sold to the public. This company assisted in the establishment of six banks in other cities. Among other things it bought a six-million-dollar interest in the Empire Trust Company of New York and at one time also had an interest, said to be a controlling one, in the Equitable Building, New York. These New York interests were later sold at a considerable profit.

Coal River Collieries Company

A further interesting financial venture of the brotherhood was an interest in coal operations in West Virginia and Kentucky. The Coal River Collieries Company had been organized by a group of locomotive enginemen at Huntington, W. Va. The incorporators succeeded in interesting President Stone in the project. Mr. Stone permitted the collieries company to sell its stock to the members of the brotherhood through the facilities of the Brotherhood Investment Company. The interest of the brotherhood in the collieries company was sufficient so that Warren S. Stone was at one time chairman of the board of directors. At any rate, under date of September 15, 1921, he sent out letter urging railroad men to buy stock in the coal company at maximum subscriptions of \$5,000 and Mr. Stone stated that the brotherhood "will be glad to have the board of directors authorize the Brotherhood of Locomotive Engineers Co-Operative National Bank to act as depositors for all subscriptions for stock and also the funds of incorporation." The Collieries Company was a three-million-dollar-enterprise. The brotherhood is said to have been interested in it to the extent of about 1½ million, including loans made by the Brotherhood Bank.

Mr. Stone hoped "for a giant corporation with a big soul full of human interest for the benefit of our stockholders and welfare of our employees," which hope was soon brought in question by John L. Lewis, president of the United Mine Workers of America, who conducted in the press a rather pointed argument with Mr. Stone because of his unwillingness to pay the union wage scale and his apparent desire to operate the mine as a non-

union property. About two weeks ago announcement was made that the collieries company had been placed in receivership and its president appointed receiver.

The Brotherhood Investment Company expanded its operations widely and established a number of securities selling corporations which included the New York Securities Corporation, the New England Securities Corporation, the Pennsylvania Securities Company, the Southern Securities Corporation and the Pacific Brotherhood Investment Company, each of which had a capital of over a million dollars and in each of which the Brotherhood Investment Company maintained a majority control.

Among its other interests, the brotherhood established in 1923, with a capital of one million dollars, the Locomotive Engineers Fire Insurance Company.

Florida Land

The capstone to the brotherhood's financial interests, however, came in its investment in real estate at Venice, Fla., at which place its investments are reported to have totaled over 15 million dollars. This land was purchased during the Florida boom, and in addition to the expenditures for land, there was a vast outlay for dredging and similar improvements. When the boom collapsed sales naturally did not keep up with the boom pace and a large part of the investment was "frozen," which means years for liquidation unless heavy losses are to be assumed.

While these various ventures were being undertaken there was much comment in the public press regarding Warren S. Stone's dual capacity as a labor leader and a financier. It appears, however, that Mr. Stone did not shine as well as he had hoped in the latter category. The expansion of the brotherhood's interests are understood to have given the brotherhood officers cause for worry as far back as 1924 at which time the affairs of the organization were probably in a more precarious situation than they are today.

I. C. C. Investigates Car Hire Settlement

AN Interstate Commerce Commission investigation of the rules for car hire settlement, I. C. C. Docket 17801, which embraces Docket 4181, second industrial railways case in the matter of allowances to short lines of railroads serving industries, and I. & S. 414, the cancellation of rates in connection with small lines by carriers in official classification territory, was held in Chicago on July 26 to 29. Further hearings will be held in Boston, Mass., on September 7; Pittsburgh, Pa., on September 12; Kansas City, Mo., on September 17; Ogden, Utah, on September 24; Portland, Ore., on September 27; San Francisco, Cal., on September 30; Houston, Texas, on October 5; New Orleans, La., on October 8; and Atlanta, Ga., on October 11.

The commission is endeavoring to determine whether it should rescind its order of July 1, 1923, which modified the rules then in effect. At the Chicago hearing the trunk line carriers showed that from July, 1923, to December of that year the General Superintendents' Association of Chicago made a study of the operations of the modified rules and found that the most economical and practical solution would be to require the industrial common carriers at Chicago to settle direct with car owners at the current per diem rate, with proper re-

claim allowance determined annually under the per diem rules. The conclusions of the General Superintendents' Association were referred to the General Managers' Association of Chicago and the commission was petitioned on March 26, 1925, to modify its order. The commission entered an order reopening Docket 4181 and I. & S. 414 for further hearing with respect to rules for car hire settlement as applied by the Chicago railroads against the Chicago Short Line Railway, the Illinois Northern, the Manufacturers' Junction and the Pullman Railroad.

The trunk line carriers at the Chicago hearing maintained that the application of the modified rules has not removed the possibility of preference to the proprietary industries of the industrial common carriers that, in the opinion of the commission, existed under the per diem with reclaim plan, but to the contrary has produced a preference greatly outweighing any possible advantage which might have resulted from the per diem with reclaim plan of settlement. The modified rules or Birmingham Southern rules, as modified and applied to the industrial common carriers, have practically relieved those carriers of car hire expense. As compared with the per diem with the reclaim plan previously in effect, the free time allowed on cars formerly subject to reclaim was substantially increased and extended to a class of traffic not previously subject to reclaim allowance, that is, cars handled in inter-terminal switching service.

An exhibit presented by the trunk line carriers showed that the net car hire expense to the four industrial common carriers previously mentioned for the year 1924 was \$5,710, while for 1925 it amounted to \$12,591. If these carriers had been on a per diem basis during the same period, and their reclaim allowance fixed under the American Railway Association rules, the net car hire or per diem expense would have been \$110,008 for 1924 and \$158,298 for 1925. The application of the Birmingham Southern rules to the four industrial common carriers resulted in a net saving to them of approximately \$105,000 in 1924 and \$145,000 in 1925, which was borne by the direct connections of the four industrial common carriers.

It was also shown that the commission in its order required that cars owned by the industrial common carriers interchanged with other railroads should be settled for at the contemporaneous per diem rate, which rate during 1924 and 1925 was \$1 per car, and all railroads using such equipment settled on that basis. However, during 1924 the four industrial common carriers were enabled, through the application of the modified Birmingham Southern rules, to move local business on their lines in foreign cars at an average cost of approximately five cents per car per day, and in 1925 at an average cost of approximately eight cents per car per day. The carriers maintained that a common carrier should be required to furnish the equipment necessary to move local business on its lines and if in lieu of owning sufficient equipment to meet such requirements cars of foreign ownership were used, the charge per day for the use thereof should be compensatory to the car owner. The trunk lines also argued that an industrial common carrier under the old rules would be required to pay for the hire of the car under the per diem arrangement incident to the performance of local or inter-terminal switching service which is merely equivalent to the cost of maintenance, depreciation, accounting, taxes and interest on the property investment which it would have to bear if it owned the cars used in such traffic. To permit these industrial common carriers to use in local or inter-terminal service cars owned by other roads without proper compensation

therefor, is equivalent to relieving the industrial common carriers from any obligation whatever to provide equipment of their own for such service, and is contrary to the provisions of the Interstate Commerce Act. It was also charged that the use of equipment under the modified Birmingham Southern rules by the four industrial common carriers at the cost of eight cents per car per day in 1925 and five cents per car per day in 1924, fails to provide the proper incentive for the prompt handling of cars such as obtains under the per diem arrangement.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended July 23 amounted to 1,012,424 cars, a decrease of 65,769 as compared with the corresponding week of last year and of 21,095 as compared with 1925. Coal loading continued to show a decrease and was 33,849 cars less than for the corresponding week of 1926. The loadings of all commodities were smaller, with the exception of less-than-carload merchandise. Loadings in all districts likewise showed decreases as compared with a year ago. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, July 23, 1927

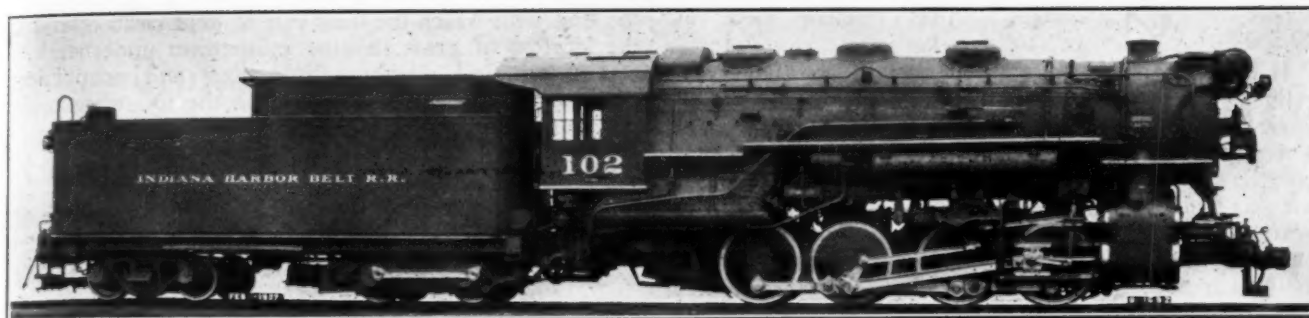
Districts	1927	1926	1925
Eastern	230,241	241,989	241,674
Allegheny	205,078	217,296	209,761
Pocahontas	57,114	60,790	55,176
Southern	149,425	150,254	144,128
Northwestern	154,653	166,939	157,838
Central Western	142,337	161,085	146,894
Southwestern	73,576	79,840	78,048
Total Western Districts	370,566	407,864	382,780
Total, all roads	1,012,424	1,078,193	1,033,519
Commodities			
Grain and grain products	47,994	61,799	49,046
Live stock	24,925	27,540	26,498
Coal	150,561	184,410	179,116
Coke	9,935	11,268	9,153
Forest products	68,010	71,687	71,002
Ore	64,083	74,916	66,486
Mdse. L. C. L.	256,366	254,401	253,926
Miscellaneous	390,550	392,172	378,292
July 23	1,012,424	1,078,193	1,033,519
July 16	1,016,782	1,076,372	1,012,854
July 9	839,308	897,556	986,893
July 2	1,021,262	1,065,641	866,199
June 25	1,018,206	1,055,362	993,173
Cumulative Total			
Thirty weeks	29,216,502	29,126,913	28,227,955

The freight car surplus for the week ended July 14 averaged 299,948 cars, an increase of 17,389 cars as compared with the preceding week. The surplus included 155,541 box cars, 99,048 coal cars, 21,645 stock cars and 15,860 refrigerator cars.

Car Loading in Canada

Revenue car loading for the week ended July 23 showed a decrease from the previous week of 1,029 cars. Compared with loadings of the corresponding week last year, total loadings increased 3,093 cars.

Commodities	Total for Canada			Cumulative totals to date	
	July 23, 1927	July 16, 1927	July 24, 1926	1927	1926
Grain and grain products	4,680	6,104	4,109	205,288	196,506
Live stock	1,968	1,795	2,032	55,867	57,433
Coal	6,818	6,850	6,353	184,492	143,697
Coke	290	296	201	9,163	11,091
Lumber	4,552	4,404	4,189	106,667	104,746
Pulpwood	2,050	2,132	2,346	107,000	86,542
Pulp and paper	2,402	2,224	2,140	64,927	72,453
Other forest products	2,510	2,651	2,655	90,513	94,937
Ore	1,614	2,129	2,018	45,008	46,213
Merchandise, L.C.L.	18,255	17,253	16,953	488,191	462,020
Miscellaneous	17,301	17,631	16,351	399,639	388,438
Total cars loaded	62,440	63,469	59,347	1,756,755	1,664,076
Total cars received from connections	36,712	35,035	37,911	1,106,231	1,079,747



Three-cylinder Eight-wheel Switch Engine, with Tender Booster, in Hump Yard Service on the Indiana Harbor Belt

Eight-Wheel Switch Engine with Large Boiler Capacity

Indiana Harbor Belt three-cylinder type handles longest trains over hump without splitting

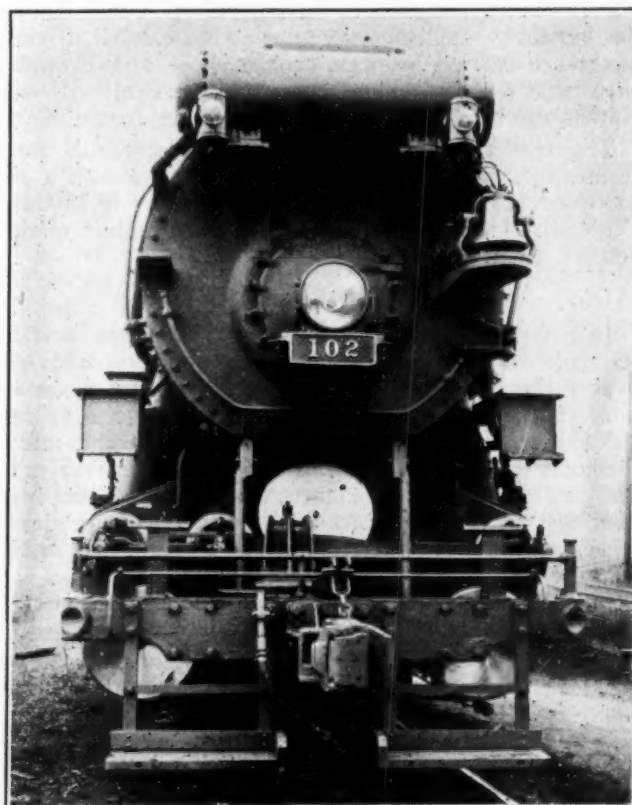
THE Indiana Harbor Belt has recently received three eight-wheel switch engines of the three-cylinder type for use in hump yard and transfer service, from the American Locomotive Company. These locomotives have now been in slow speed, heavy freight service at Gibson, Ind., for a period of five months, and had made 9,000 miles each up to July 1. During that time they have demonstrated their economy from an operating standpoint, as well as their practical freedom from mechanical defects. Depending somewhat upon traffic conditions, they are being triple crewed and used in 24-hr. service, with a short layover once a week for minor conditioning at the engine terminal. The three locomotives have not shown a marked improvement, however, either in water evaporated per pound of coal or in fuel consumption, over the two-cylinder, eight-wheel switchers formerly used on this work because the latter are also comparatively modern locomotives equipped with superheaters and feedwater heaters. The large economy in operation effected by the new power is due to its greater hauling capacity, making it unnecessary to doublehead or split the long trains of coal, steel, oil, or perishable merchandize which have to be handled over the 2.2 per cent grade at the crest of the hump at Gibson yard. In the winter time the longest train which the yard will hold can be handled over the hump without preliminary splitting and running back and forth to warm up the journals.

Comparison of Indiana Harbor Belt Two- and Three-Cylinder 0-8-0 Type Locomotives

	Two-cylinder	Three-cylinder
Cylinders, diameter and stroke.....	25 in. by 28 in.	1—23½ in. by 28 in. 2—23½ in. by 32 in.
Tractive force:		
Engine	51,200 lb.	75,700 lb.
Booster		13,800 lb.
Total	51,200 lb.	89,500 lb.
Drivers, diameter.....	51 in.	57 in.
Boiler pressure.....	175 lb.	200 lb.
Weight on drivers.....	224,000 lb.	294,000 lb.
Evaporative heating surface	2,777 sq. ft.	4,017 sq. ft.
Superheater heating surface	610 sq. ft.	953 sq. ft.
Grate area.....	47 sq. ft.	72.5 sq. ft.

The table presents a comparison of the principal dimensions of the new three-cylinder engines and the

two cylinder, eight-wheel switch engines with which they are compared in the above paragraph. With an increase in weight on drivers from 224,000 to 294,000 lb., the new locomotives have a tractive force of 75,700



Front End of the Indiana Harbor Belt Eight-Wheel Switch Engine

lb., whereas that of the former locomotives was 51,200 lb., and the diameter of the drivers on the new locomotives is 6 in. greater. In addition to the engine tractive force, the tender booster supplies 13,800 lb., which

makes a total available starting tractive force of 89,500 lb.

It will also be seen that the boilers of the three-cylinder locomotives are of much larger capacity than those of the older two-cylinder locomotives. They carry a working pressure of 200 lb. They have a total evaporative heating surface of 4,017 sq. ft. and are equipped with a Type A superheater with 953 sq. ft. of superheating surface. The grate area of 72.5 sq. ft. is unusually large for a switching locomotive. The locomotives are also equipped with Elesco feedwater heaters and American type front end throttles which are built into the superheater headers. Another noteworthy feature is the use of two fire doors, which are of the Franklin vertical type. The fireboxes are fitted with Commonwealth cast steel ash pans.

Cylinder Design

The three cylinders are of the customary American Locomotive Company design; they are of cast steel and are fitted with Hunt-Spiller gun iron bushings. Steam distribution is controlled by two Baker long-travel valve gears, the center valve being actuated by the builder's Gresley type combining motion in front of the cylinders. The reverse gear is of the Ragonnet type. The inside cylinders are inclined to permit the main rod, which drives on the second coupled axle, to clear the first coupled axle, while the two outside cylinders drive on the third pair of wheels. The outside cylinders have a stroke of 32 in., while that of the center cylinder is 28 in., to obtain proper truck clearance for the back end of the inside main rod, because of the small wheel diameter. The driving boxes on this pair of wheels are of the builder's supplementary bearing type. All driving boxes are carried between bronze shoes and Franklin adjustable wedges. The locomotives are equipped with Nathan mechanical lubricators and Hoofer flange oilers.

The tenders are built up on Commonwealth steel frames and have Acme water bottom tanks with a capacity of 12,000 gallons. The coal capacity is 15 tons. Under the front end of the tender is a Franklin tender booster.

Test Results

In a typical test one of the new locomotives handled 90 loads and 14 empties, or a total tonnage of 6,087, over the hump in 40 min. at a speed of two miles an hour, 360 lb. of coal being used in firing the engine six times. Slack was taken once to start the train; the total time of operation of the booster was 15 min. In general, one of the three-cylinder switchers will handle 40 more loaded cars than the two-cylinder, eight-wheel switcher previously used on this job, and under summer conditions will start all of the cars which can be placed on the longest and hardest track at Gibson yard and then not be worked to capacity.

Very little maintenance work has been required on these locomotives to date. The back ends of the inside main rods have been reduced after a wear of $\frac{1}{8}$ in. Floating bushings on the outside main rod back ends are worn about $\frac{3}{64}$ in. The locomotives have ample boiler capacity for the slow-speed service for which they were designed and respond promptly to the throttle, which greatly facilitates short switching and trimming. Owing to the relatively short wheel base, they can successfully negotiate sharp curves. Since being received, the exhaust nozzles have been opened to 7 in. and it is estimated that the back pressure does not exceed 4 to 7 lb. A feature much appreciated by the crews is the roomy, comfortable and convenient cab arrangement and

the ease with which the deck can be kept clean owing to the location of grate shaking mechanism underneath.

The principal weights, dimensions and proportions of the new locomotives are given in the following table:

Table of Dimensions, Weights and Proportions

Railroad	Indiana Harbor Belt
Type of locomotive.....	0-8-0
Service	Switching
Cylinders, diameter and stroke.....	$\left\{ \begin{array}{l} 1-23\frac{1}{2} \text{ in. by 28 in.} \\ 2-23\frac{1}{2} \text{ in. by 32 in.} \end{array} \right.$
Valve gear, type.....	Baker
Valves, piston type, size.....	12 in.
Maximum travel.....	6 $\frac{3}{4}$ in.
Outside lap.....	1 $\frac{1}{4}$ in.
Exhaust clearance.....	0 in.
Lead in full gear.....	$\frac{1}{4}$ in.
Weights in working order:	
On drivers.....	294,000 lb.
Total engine.....	294,000 lb.
Total engine and tender.....	515,300 lb.
Wheel bases:	
Driving	16 ft. 4 in.
Total engine.....	16 ft. 4 in.
Total engine and tender.....	56 ft. 9 $\frac{3}{4}$ in.
Wheels, diameter outside tires:	
Driving	57 in.
Journals, diameter and length:	
Driving, main.....	11 in. by 14 in.
Driving, others.....	11 in. by 14 in.
Boiler:	
Type	Wagon top
Steam pressure.....	200 lb.
Fuel	Bit. coal
Diameter, first ring, inside.....	86 in.
Firebox, length and width.....	102 $\frac{1}{4}$ in. by 102 $\frac{1}{4}$ in.
Tubes, number and diameter.....	315-2 in.
Flues, number and diameter.....	50-5 $\frac{1}{2}$ in.
Length over tube sheets.....	16 ft.
Grate area	72.5 sq. ft.
Heating surfaces:	
Firebox	220 sq. ft.
Arch tubes.....	28 sq. ft.
Tubes	2,624 sq. ft.
Flues	1,145 sq. ft.
Total evaporative.....	4,017 sq. ft.
Superheating	953 sq. ft.
Comb. evaporative and superheating.....	4,970 sq. ft.
Tender:	
Style	Water bottom
Water capacity.....	12,000 gal.
Fuel capacity.....	15 tons
General data estimated:	
Rated tractive force.....	$\left\{ \begin{array}{l} \text{Engine—75,700 lb.} \\ \text{With} \\ \text{booster 89,500 lb.} \end{array} \right.$
Weight proportions:	
Weight on drivers \div total weight engine, per cent	100
Weight on drivers \div tractive force of engine.....	3.88
Total weight engine \div comb. heat. surface.....	59.1
Boiler proportions:	
Tractive force (engine) \div comb. heat. surface.....	15.2
Tractive force (engine) \times dia. drivers \div comb. heat. surface.....	868
Firebox heat. surface \div grate area.....	3.42
Firebox heat. surface, per cent of evap. heat. surface	6.2
Superheat. surface, per cent of evap. heat. surface	23

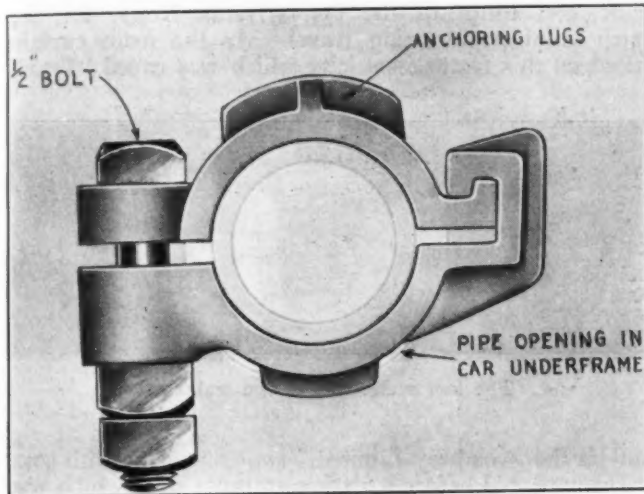


Photo Courtesy J. D. Rogers

Palace of Sultan of Zanzibar with Country's Only Railway in Foreground

Brake Pipe Anchor

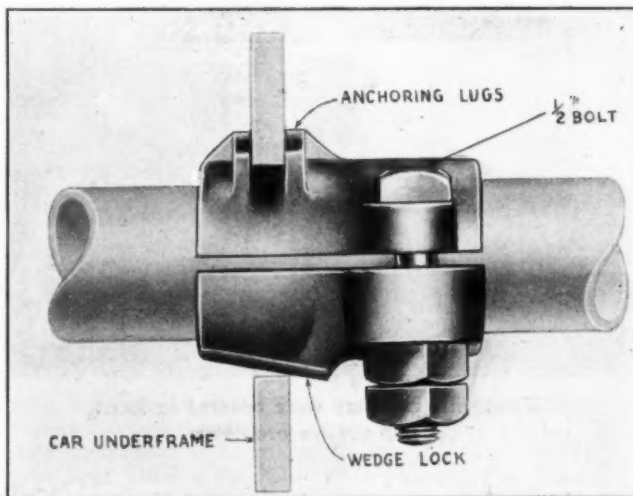
A BRAKE pipe anchor designed to accommodate the different size pipe openings in the car underframe as used in standard car construction has been placed on the market by the Guston-Bacon Manufacturing Company, Kansas City, Mo. The anchor has been designed to eliminate angle irons, U-bolts and



Section of a Brake Pipe Securely Anchored in the Cross Member of the Car

rivets, to prevent longitudinal movement and pipe vibration and to provide a long bearing surface to prevent pipe wear.

The brake pipe anchor can be applied by one man to the pipe at the opening in the cross member of the car. The top section having the anchoring lugs is placed on the pipe and slipped into place. The brake pipe is lifted



How the Anchor is Applied

so that the cross member will fit between the lugs and then the lower section is slid into place and driven home after which the bolt and nuts are applied.

The wedge at the bottom is to prevent vibration. The anchoring lugs and the corrugations on the inside surface of the two sections are to prevent longitudinal movement of the pipe. Where the brake pipe is carried below the cross members, it is necessary to use the G-B special U-bracket in conjunction with the G-B brake pipe anchor.

Consumption of Fuel Oil by Railroads

WASHINGTON, D. C.

RAILROAD fuel oil purchases account for approximately one-fifth of the total fuel oil marketed annually in the United States, states the Bureau of Mines, Department of Commerce, which has conducted a survey of the subject. During 1925, purchases totaling 70,636,559 barrels were made by the 147 Class I, II and III railroads included in the bureau's survey. Of this total, 69,461,119 barrels were consumed and 1,175,440 added to the quantity in storage. Railroad stocks of fuel oil at the end of the year amounted to 13,001,647 barrels, as compared with 11,826,207 barrels at the beginning of the year. Of the total consumed, 59,627,639 barrels were burned as locomotive fuel and 9,833,480 barrels were consumed in shops, power plants, ferry boats and other non-locomotive uses.

Although each of the 147 railroads used fuel oil to some degree in their operations, its use in large quantities was limited to a few, states E. B. Swanson, economic analyst, who conducted the survey for the Bureau of Mines. Ninety-seven railroads purchased less than 50,000 barrels each during the year; 7 railroads between 50,000 and 100,000; 16 railroads between 100,000 and 500,000; 19 railroads between 500,000 and 2,000,000; 6 railroads between 2,000,000 and 5,000,000; and two railroads purchased more than 5,000,000 barrels each. The two largest purchasers were the Southern Pacific and the Atchison, Topeka & Santa Fe which, with their subsidiary lines, purchased approximately one-half of the total.

The use of oil as a locomotive fuel is concentrated mainly in two regions, the South Central states and California; railroads operating in these two regions having purchased 58,531,082 barrels, or 83 per cent of the 1925 total. Other centers of consumption are Oregon and Washington, supplied largely from California; the area surrounding the Wyoming oil fields; and the South Atlantic, where one railroad operates on imported fuel oil. Oil is used as the principal locomotive fuel, in both freight and passenger service in California, Texas, Arkansas and Louisiana, while in Kansas, Oklahoma, and Missouri, it is used mainly in passenger service. In the North Central states and on the Atlantic Coast, with the exception of the one oil-burning railroad, the oil consumed is used in power plants, shops, ferry boats, firing-up of coal burning locomotives and the operation of oil-electric switching locomotives.

As the result of increased efficiency in oil burning methods, the Pacific Lines of the Southern Pacific Company have reported a saving of 2,362,129 barrels of fuel oil in freight and passenger service from January 1, 1920, to December 31, 1926. The saving from 1925, as compared with the efficiency of 1924, was 377,178 barrels. The Coast Lines of the Atchison, Topeka & Santa Fe reported a saving of 254,785 barrels during 1925, a saving which was slightly smaller than that reported for 1924. The combined saving of these two Pacific Coast lines, 631,963 barrels, in the burning of locomotive fuel exceeds the decrease of 430,233 barrels in total fuel oil burned by Class I railroad locomotives during 1925 as compared with 1924, and demonstrates that the decrease in quantity consumed was, to some extent, due to the increased efficiency in its use. The efficiency with which oil is used as a locomotive fuel has been increasing steadily.

This increasing efficiency has been accomplished through the co-operation of employees in fuel conserva-

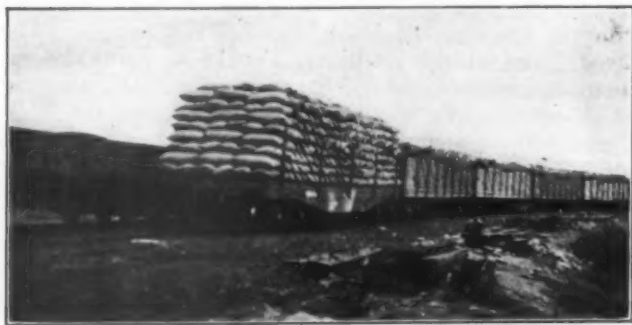
tion; the application of modern devices, such as feed-water heaters and superheaters, to older power; purchase of new and heavier power, equipped with the latest devices; more complete loading of cars, and improvements in the roadway. Fuel conservation bureaus have been established by several railroads and careful attention is given to locomotive, shop and power plant consumption. Increasing efficiency in the burning of oil in stationary power plants and shops is comparable with that obtained in locomotives.

The comparison of the quantity of oil burned with the total fuel consumed by locomotives would indicate that the maximum point in oil burning in relation to other fuels was reached in 1924, with a slight decrease in 1925, Mr. Swanson points out. Preliminary estimates based upon monthly reports indicate that the proportion for 1926 will be 10.5 per cent. There is at present no uniform national tendency either towards the conversion of coal burning locomotives to oil burning or the reverse, as the conditions of use vary with the relative costs of oil and coal in the particular region. One railroad operating in the Rocky Mountain region has reported that it is converting a number of coal burning locomotives to oil, while two railroads in the Middle West are converting oil burning locomotives back to coal. One large railroad operating to the Atlantic Coast has adopted oil for shop and other non-locomotive uses in replacement of anthracite coal, creating a demand for approximately 750,000 barrels annually.

The recent introduction of oil-electric locomotives is a development which is of importance in considering future railroad fuel consumption. This locomotive is a self-contained power unit in which a Diesel-type oil driven engine operates a generator which furnishes power to railway motors which are geared direct to the driving axles. After four months' service in the manufacturer's plant, the first locomotive of this type was placed in service by the New York Central on June 9, 1924, being used in switching freight cars in New York City. At present, ten 60-ton and three 100-ton locomotives of this type are in use, eleven of which are in switching service in New York, Philadelphia, Chicago and St. Paul; one in Utah copper mining operations; and one by a California lumber company. Of the 13 locomotives in use, 10 were placed in operation in 1926.

This study on railroad fuel oil consumption is the first of a series of studies relating to the consumption of fuel oil in the United States, being conducted by the Bureau of Mines in co-operation with the American Petroleum Institute.

Further details are given in Information Circular 6017, "Railroad Fuel Oil Consumption," by E. B. Swanson, copies of which may be obtained from the Bureau of Mines, Washington, D. C.



Flat Car of a Series Built by South Australian Railways in Company Shops

Broadway Limited Appears on Stage

A STAGE setting which featured the Broadway Limited of the Pennsylvania and the Chicago Union Station was used by a Chicago moving picture theatre July 11 to 25. The idea was developed by the production manager of the theatre and K. D. Pulcifer, editor of the Pennsylvania News, for the purpose of popularizing travel. As the main curtain lifted on this feature specialty which was called "Trav-



The last scene was in the trainshed

lin' on the Broadway Limited," two comedians with suitcases appeared before a station entrance over which was mounted the keystone of the Broadway Limited. After several remarks this drop was lifted and the scene changed to a section of the interior of the Chicago Union Station. This scenery formed a background for the orchestra and the regular stage numbers, including songs by the Broadway Quartette.

Train Departs

In the finale, the scene changed to the train shed and included a reproduction of the rear end of an observa-



Vaudeville numbers were enacted in front of the theatre orchestra

tion car between two cars on adjacent tracks. While one of the comedians mounted the platform of the car to wave good bye to the audience, the two cars were withdrawn and the observation car appeared to move as the result of a motion picture of the right-of-way which was projected on the background of the stage. This motion picture had previously been taken from the front end of a train.

AN UNUSUAL advertising medium for its passenger service is being used by the Lackawanna. It prints a sales message for tourist trips on its monthly commutation tickets.

New Books

Direct Current Relays; thirty-nine pages; 6 in. x 9 in.; paper covered. Published by the Signal Section, American Railway Association, 30 Vesey Street, New York City. Price 25 cents.

This is a thin pamphlet containing 25 pages of text and illustrations, describing in great detail direct current relays of all styles; neutral (normal, quick-acting and slow-acting) motor and interlocking relays. This material is to constitute the sixth chapter of a proposed book on signal principles and practices, in the nature of a complete manual for beginners, which is being prepared by the committee on instructions of the Signal Section. It is issued first because it is the first chapter completed.

The issuance of this chapter by itself is in the nature of a test to see how well a work of this kind is liked and to what extent it will be used.

The last nine pages consist of a series of questions to test the knowledge of the student.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Banking and Railroad, by I. B. Tigrett. The President of the Gulf, Mobile and Northern discusses them with particular reference to Mississippi. 11 p. Pub. by Development Department, Gulf, Mobile and Northern R. R. Co., Mobile, Ala. Apply.

Handbook of Labor Statistics 1924-1926, compiled by U. S. Bureau of Labor Statistics. Topical digest of important material published in the bulletins and the Monthly Labor Review. See Index, under "Railroad." 828 p. Pub. by U. S. Govt. Print. Off., Washington, D. C., \$1.00.

Law of Aviation, by Rowland W. Fixel. Discusses aircraft as common carriers, rights of navigation, rules of the air, liability, international and federal regulation and legislation. Appendix contains compilation of State, national and international regulations. 365 p. Pub. by John Byrne & Co., Washington, D. C. \$7.50.

Universal Directory of Railway Officials 1927, compiled from official sources under the direction of the Editor of the Railway Gazette. Section A, Official, lists railway institutions, societies and unions, B. covers Gt. Brit., C. Ireland, D. Europe, E. Asia, F. Africa, G. Australasia, H. North America, J. Central America, and K. South America, while an index of names of officials helps out when a name but not the railway is remembered. 402 p. Pub. by Directory Publishing Co., London, Eng., 20 shillings.

Periodical Articles

Beauty the New Business Tool, by Earnest Elmo Calkins. The "amenability of railroads to purely aesthetic arguments" is favorably commented upon with specific examples on page 151, while on page 156 the possibility of art directors in railway and other large corporate organizations is suggested. Atlantic Monthly, August, 1927, p. 145-156.

New England Railroads Making Rapid Gains, by Arthur F. Lucas. Contrasts present conditions with those obtaining several years ago. Annalist, July 22, 1927, p. 131-132.

Overflow Notes, by Helen Murphy. A resident of Tallulah, La., describes the everlasting trek "to the railroad" and emergency operations of the Missouri Pacific and the Illinois Central in advance of the Mississippi flood, p. 225-226. Atlantic Monthly, August, 1927, p. 223-230.

Scenery and Signboards, by Stephen Leacock. Artistic and historical impressions that can be obtained from trains between New York and Washington. Harper's Magazine, August, 1927, p. 382-383.

Looking Backward

Fifty Years Ago

The aggregate of the profits of 43 railroads accruing to the stockholders was \$46,327,000 in 1873 and \$22,580,000 in 1876, a reduction of more than one half in three years.—*Railroad Gazette*, August 3, 1877.

Some of the so-called "workingmen's associations"—not composed of railway men—are demanding not only that wages be increased, but that the length of their day's work be reduced to eight hours. This last demand is surprising folly. The man who really wants to work is glad to work a full day. There are comparatively few business men in the country who work less than 10 hours a day and many are toiling from 12 to 16 hours out of the 24.—*Railway Age*, August 9, 1877.

Judge Drummond of the United States Circuit Court has set a precedent for the treatment of strikers who interfere with railway traffic by sending to prison for contempt of court eight men who had hindered the operation of trains on the Toledo, Peoria & Warsaw. William H. Vanderbilt, president of the New York Central, has shown his appreciation of the loyalty of the trainmen who refrained from participating in the strike by distributing \$100,000 among all but the 500 strikers.—*Chicago Railway Review*, August 4, 1877.

Twenty-Five Years Ago

An arrangement was lately made whereby the Pere Marquette secures the right to run trains over the Lake Erie & Detroit from Port Sarnia, Ont., to Rondeau and Port Stanley, where it will connect with the car ferry from Conneaut, Ohio, thus providing a short cut from the upper peninsula of Michigan across Lake Erie to the Bessemer & Lake Erie.—*Railway and Engineering Review*, August 9, 1902.

The St. Louis & San Francisco offers to acquire the common and preferred stock of the Chicago & Eastern Illinois in exchange for a corresponding number of shares of Frisco common and preferred stock. The transaction is the equivalent of a guarantee to holders of the new Frisco stock of 6 per cent on Eastern Illinois preferred and of 10 per cent on Eastern Illinois common.—*Railway Age*, August 8, 1902.

The quarterly accident bulletins issued by the Interstate Commerce Commission do not seem to indicate the great decrease in the number of accidents in connection with car coupling which it was hoped would result from the adoption of automatic couplers. In the nine months from July 1, 1901, to April 1, 1902, 103 employees were killed and 1,598 injured in this class of accidents.—*Railway Age*, August 8, 1902.

Ten Years Ago

The Baltimore & Ohio, like the Pennsylvania, has called to the service of the company considerable numbers of retired employees.—*Railway Age Gazette*, August 3, 1917.

A strike of switchmen belonging to the Brotherhood of Railroad Trainmen was called on 19 roads in the Chicago switching district at 6 a. m. on July 28 and continued until 5:45 a. m. July 30.—*Railway Gazette*, August 3, 1917.

During the next few months it is estimated that 100,000 cars will be needed for government purposes. Plans for the expedited handling of this movement of lumber and other supplies to shipbuilding yards, cantonments and other mobilization points were formulated by the Railroads' War Board on July 31. Over 12,000 carloads of lumber and other building supplies have been delivered by the railroads to the 16 cantonment sites within 30 days from the date the government placed the first order for cantonment materials.—*Railway Age Gazette*, August 3, 1917.

Odds and Ends of Railroading

In accordance with an old Turkish custom, a hundred sheep were sacrificed at the recent dedication of the 240-mile Angora-Kaisariyeh railway. This is also an old Wall street custom.—*LIFE*.

An Associated Press dispatch from Kane, Pa., tells of a short line railroad in the vicinity which, because it goes through dense forest lands, has decided not to run freight trains except on rainy days when there will be no danger of forest fires. Passenger trains are not included because this traffic is handled by rail motor car.

Before John McNamara joined the roundhouse forces of the Chicago & Alton at Bloomington, Ill., he served for four years in the Egyptian Expeditionary forces of Great Britain, enlisting from Limerick, Ireland, in 1916. On June 28 he received two bronze service record medals and a silver medal in recognition of distinguished service in Palestine. With the Tenth Irish Artillery McNamara saw service at Salonika and looked in on the recapture of Jerusalem from the Turks in 1918.

Fred G. Davis, photographer in the duplicating bureau of the Southern Pacific at San Francisco, Cal., has the unusual distinction of operating a radio broadcasting station of his own, "6GE," which has been heard in such widely separated places as England, Australia, Chile, Alaska, Philippine Islands and New Zealand. He has had two-way communication with a station at Johannesburg, South Africa, about 10,500 miles from San Francisco. Mr. Davis was formerly in the wireless service on Pacific Coast passenger steamers.

Residents of Fort Deposit, Md., are reported to be "up in arms," as the saying goes, over the proposal to raise the grade of the railroad tracks through the town. The town is now only about 400 ft. wide because of a precipitous hill at its back and the Susquehanna river on the other side. The construction of a railroad embankment along the river front would, it is asserted, put the town "in a ditch" with the embankment one side and the hill on the other. It is not denied, however that the railroad must do something toward altering its grade, since a new dam being built not far away will flood the tracks at their existing level.

Because the highway leading from the south to Accord, Ulster county, New York, a summer home area, is torn up, the New York, Ontario & Western has agreed to extend additional train service on Friday evenings for the benefit of week-end visitors who formerly availed themselves of motor transportation. Business men and residents of the town complained to the state Public Service Commission of the lack of adequate railroad service. All of which sounds to this department not unlike the case of the family in the small town who, when they had the money, used to buy all their goods from a mail order house and when, on the other hand, they were flat broke made their purchases on credit from a local merchant.

A negro car repairer on the Illinois Central at Memphis according to an Associated Press dispatch, mystified Vice-President Dawes completely and caused him the loss of a perfectly good hand-embroidered handkerchief. The magical car repairer, so runs the story, says that when he was a boy he had a vision from heaven and that he became endowed with the power to blow his breath on any object and set it afire. He asked for a handkerchief, and Mr. Dawes let him have one with the remark, "Well, I'll never see it again." The sorcerer, true to his promise, blew his breath on it and after a few mysterious puffs the handkerchief caught fire. The trick went unexplained.

An example of a real desire to make amends for failure to provide convenient service has recently come to the notice of this department. It happened in a city where a transfer company has a contract to convey passengers between the railroad stations. A passenger did not find the transfer company's bus at the station when he arrived so he made his transfer by taxicab, presenting his coupon to the transfer company for a refund. In due course

he received a letter stating that while the transfer company received a certain sum from the railroad for each passenger carried, it did not wish to limit itself to such a refund and would gladly pay the cost of the ride in the taxicab. The passenger answered saying that he had forgotten what he paid for his taxi ride and would be satisfied with a refund of the transfer company's rate. The transfer company, nevertheless, sent him a check for almost twice its rate, which, it estimated, is what his taxi fare must have been.

Railway Run by Air*

Mark W. Potter sends us the following information:

In the July 15, 1846, number of "The Voice of Truth," published at Pittsfield, Mass., (to which my grandfather was a subscriber) appears the following item:

"A Railway Race—The editor of the London Chronicle gives the following account of an exciting scene.

"A railway race is a sufficiently exciting and interesting event; but it is rarely witnessed, and scarcely ever in perfect safety. Between a pair of well matched locomotives it would be sufficiently exciting; but between a new system, like the atmospheric and its rival, the locomotive, the character and reputation of both systems for speed depending on the issue, a well matched contest would be of no common interest. In this case we were lucky enough to see such a race; and we believe any of our readers who leave London bridge station at twenty minutes past two, and take an atmospheric ticket, may any day see the same. We were standing at Forest Hall station, preparing to start, when it was announced that the Dover express train was in sight. Immediately we (the atmospheric train) made preparations to start, and were in the act of starting from rest when the locomotive train 'whisked' past us at probably some 35 miles an hour. We started, but before we got into motion at any velocity the Dover train was a mile ahead of us and was evidently gaining rapidly in speed. However, on we went like a whirlwind, and it soon became evident that we were gaining on our rival. Three or four minutes decided the race. We passed the express train at a rate exceeding her own by 15 or 20 miles an hour. Our velocity could not have been less than 60 miles an hour. It was easily maintained, and we were over the Brighton viaduct and considerably beyond it before the Dover train reached it."

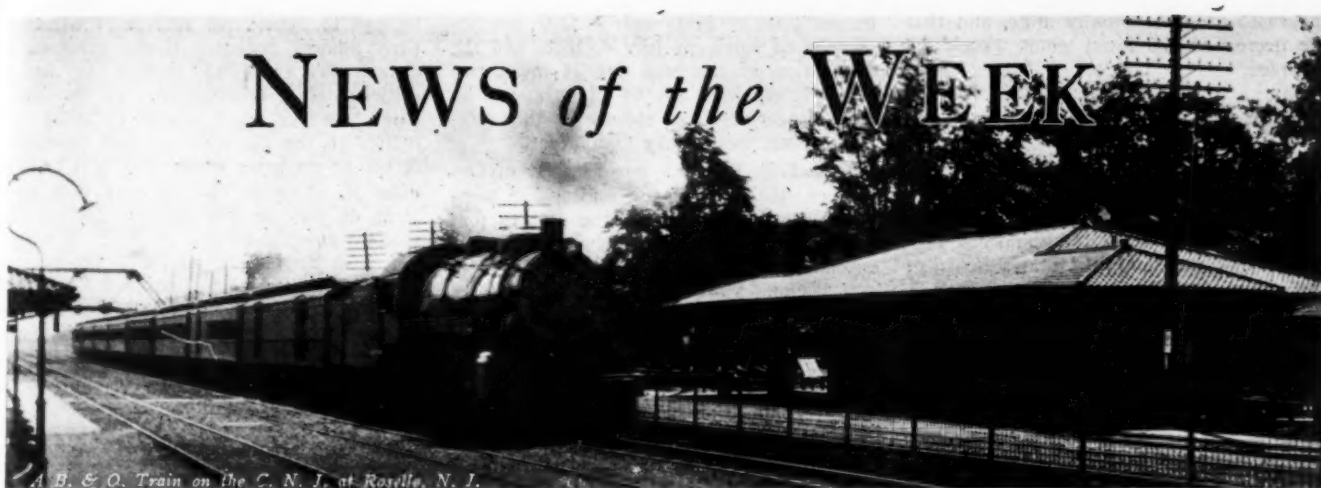
* Editor's Note: The atmospheric railway referred to was a type of locomotion used on four or five railways in Europe about the middle of the last century. The motive power was derived from the pressure of the atmosphere acting on a piston working in a continuous iron tube of uniform bore laid from one place to another, the pressure being created by exhausting the air from that end of the tube toward which it was desired that the piston should advance, or by forcing in air behind it, or by both methods at once. As may be imagined, the system was extremely expensive to operate. Among its other disadvantages, which finally led to its abandonment, were the terrific noise created and the frequent occurrences of accidents and breakdowns.

Material

The railroad trains and the right-of-way
Are built of iron and steel,
And painted wood with fittings gay—
Which clever thought reveal.
But the permanent way and the speeding trains
Would still be trees and ore
Without the work and careful pains
Of the men who are no more.
The many miles that the stock has rolled
Would total up to naught
Without the thousands brave and bold
Who schemed and bled and fought.

Oh, the railroad trains and the track that winds
Through prairie and the glen
Are fashioned from the brawn and minds
Of the country's finest men! VERNUS PYLE.

NEWS of the WEEK



THE TELEGRAPH OPERATORS of the Chicago, Burlington & Quincy who have asked for an increase of six cents an hour in their wages, are taking a vote to see if a strike shall be authorized.

HEARINGS before an arbitration board on the application of the Chicago & North Western maintenance of way employees for an increase in wages of five cents an hour, which opened on July 8, were ended on August 2. A decision is expected within a week.

THE CHICAGO & ALTON has opened a school of instruction for conductors, passenger flagmen and train and parlor car porters at Bloomington, Ill. The purpose of the new school is to educate each train employee in courtesy and to review the train rules.

THE BOARD OF PENSIONS of the Chicago, Rock Island & Pacific will entertain the 700 members on its "roll of honor" at a luncheon on October 10, which will be addressed by President James E. Gorman and other officers of the Rock Island.

JAMES BICE, Byron P. Hicks and Robert H. Dunn have been appointed as members of the Michigan Public Utilities Commission succeeding Sherman T. Handy, R. Duff and S. D. Pepper. The commission consists of five members. Samuel Odell has been elected chairman of the commission following the resignation of Mr. Handy. Mr. Bice is promoted from the position of chief inspecting engineer.

THE INTERSTATE COMMERCE COMMISSION has issued an order relieving the Pennsylvania from the necessity of equipping with automatic train control certain specified branch line locomotives operating over its Panhandle division between Mingo Junction, Ohio, and Weirton Junction, W. Va., and between Steubenville, Ohio, and Weirton Junction, and also on its Middle division between Rockville, Pa., and Harrisburg.

THE BROTHERHOOD of Railway and Steamship Clerks, Freight Handlers and Station Agents has filed a suit at Houston, Tex., seeking to enjoin the Southern Pacific from forming a union among its clerks

to replace the brotherhood and alleging that the purpose of the move is to defeat a demand for salary increases. It is also charged that the road refused to sit in a conference with the brotherhood representatives in the ground that the brotherhood did not represent a majority of the employees.

AN INJUNCTION restraining officers of the Southern Pacific from fostering the Association of Railway Employees and persuading Southern Pacific employees to become members was granted by Federal Judge J. C. Hutcheson at Houston, Tex., on July 29. The suit to enjoin the Southern Pacific from influencing employees to join the newly organized association of clerks, which was alleged to be a "company union," was brought by the Brotherhood of Railway Clerks and Freight Handlers. The brotherhood contended that the formation of a company union was in violation of the railway labor act because it destroyed the free agency of the employees in union matters.

Cost of Fuel in May

The average cost of coal used as fuel for road locomotives in freight and passenger service by Class I railroads for the month of May was \$2.64 a ton, as compared with \$2.62 in May of last year, according to the Interstate Commerce Commission's monthly railroad fuel statistics. For the five months ended with May the average was \$2.68 as compared with \$2.63 last year. The average cost of fuel oil for the five months was 2.94 cents per gallon, as compared with 2.91 cents last year. The total cost of coal and fuel oil for the five months' period was \$135,306,316, as compared with \$135,668,384 for the corresponding period of last year.

Pennsylvania to Buy Electric Power

An electric power contract has been signed by the Pennsylvania Railroad and the Philadelphia Electric Company. The contract covers a minimum term of 20 years and provides not only for the power used on the present electrified districts between Philadelphia and Paoli, and Phila-

delphia, Germantown and Chestnut Hill, but also for the electrification now under way between Philadelphia, Pa., and Wilmington, Del., and Philadelphia and West Chester, as well as future extensions in this territory which may be decided upon later. The power will be supplied principally from the large development at Conowingo, Md., on the Susquehanna river.

Packing for Domestic Shipment Studies

This is the title of seven pamphlets, of from 15 to 30 pages each, which have been issued by the Department of Commerce, giving the results of studies which have been made by an advisory board, appointed by Secretary Herbert Hoover, of the seven principal methods of preparing merchandise for transportation, namely: Fiber containers, cleated plywood boxes, wire-bound boxes, wood and steel barrels, wooden boxes, nailed wooden crates and baling. These pamphlets have been prepared by the Bureau of Foreign & Domestic Commerce, Julius Klein, director, and are numbered 10 to 16, inclusive, in the domestic commerce series.

Each of these reports is a detailed essay on the subject with which it deals and each is fully illustrated.

Department of Justice Asks That Valuation Cases Be Advanced

The Department of Justice announces that it has presented to the Supreme Court of the United States a motion to advance on its docket for hearing at the October term the valuation cases in which the Department and the Interstate Commerce Commission have appealed from a decision of the district court for the western district of Missouri enjoining the use of the commission's valuation of the Kansas City Southern and affiliated companies. In its brief accompanying the motion the department says that in its opinion the issues involved are similar to those in the Los Angeles & Salt Lake case, decided by the Supreme Court in February, a few days before the decision of the lower court in the Kansas City Southern case; that all that is necessary for the court to do is to examine the record and be satisfied that

the cases are substantially alike, and that the decree of the lower court should be reversed.

Eastern Roads Give Enginemen 7½ Per Cent Increase

Following conferences extending over two weeks between the railroads and the Brotherhood of Locomotive Engineers, with co-operation of the United States Board of Mediation, it was announced on August 3, that the railroads in eastern territory—20 systems including 54 roads—had granted their enginemen an increase of 7½ per cent in wages; the effect of the agreement being to increase the payrolls about \$6,500,000 annually and to benefit 30,000 enginemen. The increase is to take effect as from August 1, and the contract is for one year; with a proviso that it continue thereafter if neither party gives 30 days' notice of the desire to bring the agreement to an end.

The Wheeling & Lake Erie, the Delaware & Hudson, the Pere Marquette, the Ann Arbor and the Boston & Maine did not participate in the conferences and their enginemen are not affected.

Operating Results Show Flood's Effect on Railroads

The manner in which the Mississippi Valley floods have adversely affected the traffic of railroads in that area is shown in a statement of operating results on the Missouri Pacific for the first six months of 1927, issued on August 1 by L. W. Baldwin, president. The total operating revenues for that period were \$60,143,903, as compared with \$63,722,195 for the corresponding period in 1926. Net railway operating income in the first six months of 1927 amounted to \$5,871,007, while in the same period of 1926 it was \$8,725,789. Operating revenues of the Missouri Pacific for June, 1927, also showed a decline from the operating revenues for June, 1926, the figures for the two months being \$9,667,918 and \$10,578,178, respectively. The net railway operating income for June of this year was \$684,945, while in June, 1926, it amounted to \$1,466,796.

On the Gulf Coast lines the total operating revenues were \$1,017,765 in June, 1927, as compared with \$1,293,987 for the same month last year. For the first six months of this year the operating revenues totaled \$8,185,337 and the net railway operating income was \$1,147,177, while for the first six months of 1926 the operating revenues were \$8,141,301 and the net railway operating income was \$1,803,642.

Baltimore & Ohio Employees Celebrate

The meeting of the Newark Division Veterans' Association of the Baltimore & Ohio, held at Newark, Ohio, on July 28, took the form of a celebration of the railroad company's centennial and a chief feature of the proceedings was an address by President Daniel Willard.

Mr. Willard, briefly sketching the history of the road from the granting of its charter

by the state of Maryland, in 1827, the beginning of work on July 4, 1828, and the completion of the road for 14 miles two years later, went on to give interesting data concerning the spread of the company's lines west of the Ohio river.

Wheeling, W. Va., was reached in December, 1852, or 25 years after the company was organized; and the cost to that time was \$30,000,000 or three times the estimate that had been made when the road was begun. Plans were made immediately thereafter to extend westward; and, with connecting lines, trains were run through to the Mississippi river at St. Louis in 1857. The Chicago line, which was completed from Bellaire, Ohio, to Columbus, in 1854, was acquired by the Baltimore & Ohio in 1866. The Baltimore & Ohio reached Pittsburgh, Pa., in 1871, and Chicago, via Newark, in 1874; and the extension eastward to Philadelphia, completing a New York connection, was finished in 1886.

Incidentally, Mr. Willard referred to the locomotive York, the steam locomotive built by Phineas Davis of York, Pa., in response to the company's offer in 1830 of a prize of \$4,000 to the person who could furnish the best steam locomotive. A companion to the York, named the Atlantic, was built soon after. These two engines have been preserved down to the present time, and recently have been put in working order.

In closing his address and bringing his review of railroad life down to the present time, Mr. Willard appealed to all employees and officers to give, in their practical endeavors, the highest meaning to the word "service." This means, first of all, a courteous and agreeable contact with the public, but also much more. Continuing he said:

"I have no doubt individual instances do occur, perhaps every day somewhere on the Baltimore & Ohio, where the particular employee who comes in contact with the public is not as courteous, not as sympathetic and helpful as he should be, as it is his duty to be; but I repeat that I have reason to feel certain that in the great majority of cases Baltimore & Ohio employees and representatives are trying to live up to the standard that I have indicated. But after we have made our first contact with a prospective customer, we have still devolving upon us the duty of providing the passenger with a safe, comfortable and agreeable ride, taking him to his destination on time. We also have the task of seeing that the freight which is shipped over our line is moved safely and without damage to its destination within the time which we advertise for such service, and delivered promptly in good condition where the consignees can conveniently receive it and take it away. In the performance of this duty every employee of the railroad plays a more or less important part.

"There is one more thing that all can do regardless of their specifically assigned duties, and that is to remember at all times that they are a part of the Baltimore & Ohio organization; that they are interested in its service, and that its success means their success. Keeping that thought constantly in mind, they should always be

prompt to defend the service of the company against criticism if the criticism is unfair, and just as prompt to accept criticism if it is deserved. In the latter case, however, they ought to bring the matter to the attention of that particular officer or employee whose duty it is to look after it, in order that he may take such steps as may be necessary to correct the matters complained of. * * * I would not wish anyone to advise a prospective customer to use the Baltimore & Ohio if it was evident that the service of some other railroad would better fit his immediate requirements. Business secured by misrepresentation is not an asset, but a liability."

Earnings for First Six Months Show Decrease

Class I Railroads for the first six months this year, had a net railway operating income of \$472,611,052 which, was at the annual rate of return of 4.58 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In the first half of 1926, their net railway operating income was \$495,598,414 or 4.93 per cent on their property investment.

Gross operating revenues for the first six months in 1927 totaled \$3,022,381,698, compared with \$3,035,101,220 for the same period last year or a decrease of 0.4 per cent.

Operating expenses for the first half of the year amounted to \$2,308,888,990 compared with \$2,304,453,383 for the same months one year ago or an increase of 0.2 per cent.

Class I railroads in the first six months of 1927 paid \$185,158,597 in taxes, compared with \$183,632,277 for the same period the year before. For the month of June alone, the tax bill of the Class I railroads amounted to \$32,580,351, a decrease of \$622,925 under June the previous year.

Twenty-seven Class I railroads operated at a loss in the first half of 1927 of which twelve were in the Eastern, four in the Southern and eleven in the Western district.

Net railway operating income by districts for the first six months with the percentage of return based on property investment on an annual basis follows:

		Per cent
New England Region....	\$19,191,677	5.05
Great Lakes Region.....	89,348,978	5.08
Central Eastern Region....	112,569,152	5.26
Poconos Region	40,717,324	8.51
Total Eastern District..	261,827,131	5.50
Total Southern District..	69,031,887	4.63
Northwestern Region	32,852,244	2.59
Central Western Region..	73,218,881	3.82
Southwestern Region	35,680,909	4.02
Total Western District..	141,752,034	3.48
United States.....	\$472,611,052	4.58

Class I railroads for the month of June had a net operating income of \$87,363,547, which for that month, was at the annual rate of return of 4.35 per cent on their property investment.

In June last year, their net railway operating income was \$107,393,656 or 5.48 per cent.

Gross operating revenues for the month of June amounted to \$517,028,880, compared with \$541,447,283 in June last year,

or a decrease of 4.5 per cent. Operating expenses in June totaled \$388,024,845 compared with \$391,419,366 in the same month in 1926 or a decrease of nine-tenths of one per cent.

Class I railroads in the Eastern District for the first six months in 1927 had a net railway operating income of \$261,827,131 which was at the annual rate of return of 5.50 per cent on their property investment. For the same period in 1926 their net railway operating income was \$264,088,563 or 5.71 per cent on their property investment. Gross operating revenues of the Class I railroads for the first six months in 1927 totaled \$1,538,399,367, an increase of 0.4 per cent over the corresponding period the year before while operating expenses totaled \$1,161,712,915, an increase of 0.2 per cent over the same period in 1926. Class I railroads in the Eastern District for the month of June had a net railway operating income of \$49,706,686 compared with \$57,753,673 in June 1926.

Class I railroads in the Southern district for the first six months in 1927 had a net railway operating income of \$69,031,887 which was at the annual rate of return of 4.63 per cent on their property investment. For the same period in 1926 their net railway operating income amounted to \$79,984,905 which was at the annual rate of return of 5.65 per cent. Gross operating revenues of the Class I railroads in the Southern district for the first six months in 1927 amounted to \$414,467,632, a decrease of 6.3 per cent under the same period the year before while operating expenses totaled \$315,063,125, a decrease of 3.6 per cent. The net railway operating income of the Class I railroads in the Southern district in June amounted to \$9,136,971, while in the same month in 1926 it was \$12,491,099.

Class I railroads in the Western District for the first six months in 1927 had a net railway operating income of \$141,752,034 which was at the annual rate of return of 3.48 per cent on their property investment. For the first six months in 1926, the railroads in that district had a net railway operating income \$151,524,946 which was at the annual rate of return of 3.79 per cent on their property investment. Gross operating revenues of the Class I railroads in the Western District for the first six months this year amounted to \$1,069,514,699 an increase of 0.9 per cent over the same period last year while operating expenses totaled \$832,112,950, an increase of 1.7 per cent compared with the first six months the year before. For the month of June, the net railway operating income of the Class I railroads in the Western District amounted to \$28,519,890.

The net railway operating income of the same roads in June 1926 totaled \$37,148,884.

The summary follows:

Class I Railroads—United States

	Month of June	
	1927	1926
Total operating revenues	\$517,028,880	\$541,447,283
Total operating expenses	388,024,845	391,419,366
Taxes	32,580,351	33,203,276
Net railway operating income	87,363,547	107,393,656
Operating ratio—per cent	75.05	72.29
Rate of return on property investment	4.35%	5.48%

Six months ended June 30

Total operating revenues	\$3,022,381,698	\$3,035,101,220
Total operating expenses	2,308,888,990	2,304,453,383
Taxes	185,158,597	183,632,277
Net railway operating income	472,611,052	495,998,414
Operating ratio—per cent	76.39	75.93
Rate of return on property investment	4.58%	4.93%

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

- AIR BRAKE ASSOCIATION.**—T. L. Burton, 165 Broadway, New York City. Annual convention, 1928, Detroit, Mich. Exhibit by Air Brake Appliance Association.
- AIR BRAKE APPLIANCE ASSOCIATION.**—Charles R. Busch, Buffalo Brake Beam Co., 32 Nassau St., New York. Meets with Air Brake Association.
- AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.**—J. D. Gowin, 112 W. Adams St., Chicago.
- AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.**—E. L. Duncan, 332 S. Michigan Ave., Chicago.
- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.**—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next annual meeting, November 1, 1927, Havana, Cuba.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.**—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Annual convention, June, 1928, Memphis, Tenn.
- AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.**—C. E. Bell, Seaboard Air Line, Washington, D. C. Next meeting, October, 1927, Chicago.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.**—J. W. Welsh, 292 Madison Ave., New York. Annual convention, Oct. 3-7, 1927, Cleveland Public Auditorium, Cleveland, Ohio.
- AMERICAN RAILROAD MASTER TINNERS' COPPER-SMITHS' AND PIPE FITTERS' ASSOCIATION.**—C. Borchardt, 202 North Hamlin Ave., Chicago, Ill.
- AMERICAN RAILWAY ASSOCIATION.**—H. J. Forster, 30 Vesey St., New York, N. Y. Division I.—Operating—J. C. Caviston, 30 Vesey St., New York. Freight Station Section (including former activities of American Association of Freight Agents)—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago. Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., N. Y. Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association)—J. C. Caviston, 30 Vesey St., New York. Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting, May 16 and 17, 1928, Buffalo, N. Y. Telegraph and Telephone Section including former activities of the Association of Railroad Telegraph Superintendents.—W. A. Fairbanks, 30 Vesey St., New York. Next meeting, Oct. 4-6, The Willard, Washington, D. C. Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting officers).—G. W. Covert, 431 South Dearborn St., Chicago. Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York. Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Annual meeting, March 6-8, 1928, Chicago. Exhibit by National Railway Appliances Association. Construction and Maintenance Section.—G. H. Fritch. Electrical Section.—E. H. Fritch. Signal Section (including former activities of the Railway Signal Association).—H. S. Balliet, 30 Vesey St., New York. Next meeting, Sept. 13-15, 1927, Mount Royal Hotel, Montreal, Que. Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 13-20, 1928, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association. Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago. Annual convention, Sept. 13-15, 1927, Hotel Kentucky, Louisville, Ky. Division VI.—Purchases and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y. Division VII.—Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South

- Dearborn St., Chicago, Ill. Annual meeting, 1928, Detroit, Mich.
- CAR SERVICE DIVISION.**—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.
- AMERICAN RAILROAD BRIDGE AND BUILDING ASSOCIATION.**—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Exhibit by Bridge and Building Supply Men's Association. Annual convention, October 18-20, 1927, Hotel Nicollet, Minneapolis, Minn.
- AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.**—M. C. Burton, General Industrial Agent, A. T. & S. F., Topeka, Kan. Semi-annual meeting, Dec. 1 and 2, 1927, Chicago. Annual convention, 1928, Miami, Fla.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.**—(Works in co-operation with the American Railroad Association Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Annual meeting, March 6-8, 1928, Chicago. Exhibit by National Railway Appliances Association.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.**—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago. Annual convention, Aug. 31, Sept. 1 and 2, 1927, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.
- AMERICAN SHORT LINE RAILROAD ASSOCIATION.**—T. F. Whittelsey, 1319-21 F St., N. W., Washington, D. C.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.**—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Marion B. Richardson, Associate Mechanical Editor, *Railway Age*, 30 Church St., New York.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.**—E. J. Stocking, 111 West Washington St., Chicago. Next annual convention, Jan. 24-26, 1928, Montreal, Que.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.**—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Next meeting, June, 1928, Omaha, Neb.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.**—Jos. A. Andreucetti, C. & N. W., Room 413, C. & N. W. Station, Chicago. Annual meeting, Oct. 25-28, 1927, Hotel Sherman, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.
- ASSOCIATION OF RAILWAY EXECUTIVES.**—Stanley J. Strong, 17th and H. Sts., N. W., Washington, D. C.
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.**—D. A. Hultgren, secretary, Massey Concrete Products Co., 1328 McCormick Bldg., Chicago. Annual exhibit at convention of American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.**—C. R. Crook, 129 Charron St., Montreal, Que.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.**—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.
- CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.**—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.
- CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.**—R. E. Giger, 721 North 23rd St., East St. Louis, Ill. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.
- CENTRAL RAILWAY CLUB.**—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.**—(See Railway Car Department Officers' Association.)
- CINCINNATI RAILWAY CLUB.**—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.
- CLEVELAND RAILWAY CLUB.**—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.**—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next convention, August 16-18, 1927, Hotel Lafayette, Buffalo, N. Y. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.**—W. R. Walsh, Ewald Iron Co., Louisville, Ky.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.**—L. G. Plant, 80 E. Jackson Blvd., Chicago. Annual convention, May 7, 1928, Chicago. Exhibit by International Railway Supply Men's Association.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.**—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Annual convention, September 6-9, 1927, Chicago.
- INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.**—W. J. Dickinson, 189 W. Madison St., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—E. A. Morse, vice-president, Potosi Tie & Lumber Co., St. Louis, Mo. Next annual convention, April 24-26, 1928, Arlington Hotel, Hot Springs, Ark.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Annual meeting, October 17, 1927, Dallas, Tex.

NATIONAL RAILWAY APPLIANCE ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: J. E. Long, Superintendent Safety, D. & H. Albany, N. Y.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings 3rd Friday in month, except June, July and August.

PACIFIC RAILROAD CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILROAD MOTOR TRANSPORT CONFERENCE.—R. H. Newcomb, 492 South Station, Boston, Mass.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C. Next convention, May 1-4, 1928, Atlanta, Ga.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa. Annual meeting, November, 1927, Hotel Commodore, N. Y.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago. Annual convention, August 23-25, 1927, Hotel Sherman, Chicago. Supply Men's Association.—B. S. Johnson, W. H. Miner, Inc., 209 S. La Salle St., Chicago.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers, Oct. 25-28, Hotel Sherman, Chicago.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association, September, 1927.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 11-13, 1927, Detroit, Mich.

RAILWAY REAL ESTATE ASSOCIATION.—C. C. Marlor, 208 W. Washington St., Chicago.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, A. R. A.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Annual meeting, Sept. 1-3, 1927, Detroit, Mich.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual convention, September 20-22, 1927, Buffalo, N. Y. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A., Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—Clyde Kimball, Inman Shops, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & A. Ry., Atlanta, Ga.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo-Ajax Corporation, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association, September, 1927.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, Gen. Supt. R. S., New York Central, Buffalo, N. Y. Annual meeting, September 13-16, 1927, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—J. W. Fogg (treasurer), vice-pres. of MacLean-Fogg Lock-Nut Co., 2649 N. Kildare Ave., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

Traffic

The Long Island Railroad on Saturday, July 2, carried 453,400 passengers, the largest number ever transported by this railroad in one day; and in the five days covering the Fourth-of-July traffic, the total number carried was 1,866,000, as against 1,717,000 last year and 1,780,300 in 1925.

A train of 40 carloads of ginger ale was shipped from the plant of the Clicquot Club Company at Millis, Mass., to Chicago on July 16 to 19. The train, which was handled by the New York, New Haven & Hartford, the Boston & Maine, the Canadian Pacific and the Wabash, left Millis at 10 a. m. on July 16 and arrived in Chicago at 3.30 p. m. on July 9.

The Pennsylvania has inaugurated through sleeping car service from Chicago to Atlantic City, N. J., the service being handled on the Pennsylvania Limited. Cars leave Chicago at 5.30 p. m. Central time and arrive at Atlantic City at 4.44 p. m. eastern time the following day. Returning, cars leave Atlantic City at 9 p. m., arriving in Chicago at 8.10 p. m.

The Louisville & Nashville has cut the running time of Trains 101 and 104 between Cincinnati, Ohio, and Memphis, Tenn. Train 101 now leaves Cincinnati at 7 p. m. instead of 7:15 p. m., and arrives in Memphis at 7:30 a. m. instead of 8:45 a. m. Train 104 leaves Memphis at 8:45 p. m. as previously and arrives in Cincinnati at 11:55 a. m. instead of 12:40 p. m.

Record Panama Canal Traffic to June 30, 1927

Transits of commercial vessels through the Panama Canal in the fiscal year ending June 30, 1927, totaled 5,475, according to the Canal Record. This established a new high record for number of commercial transits, as compared with the previous record of 5,420 for the calendar year ending December 31, 1926. Another record established during the year was the amount of cargo carried, 27,748,215 long tons, an increase of 0.58 per cent over the calendar year 1926.

Tolls collected during the fiscal year ending June 30, 1927, amounted to \$24,228,830, falling short a little more than \$62,000 of the \$24,290,963 collected during the fiscal year 1924, which still remains as a record year for tolls.

Reduction in Coal Rates from Southern District Proposed

Freight tariffs proposing reductions of 20 cents a ton in the rates on "lake cargo" bituminous coal from the southern district mines of West Virginia, Kentucky and Tennessee to the Lake Erie ports, to meet the reduction of 20 cents a ton ordered by the Interstate Commerce Commission in the rates from Pennsylvania, Ohio and northern West Virginia fields, have now

been filed with the commission by the Norfolk & Western, the Louisville & Nashville, the Cincinnati, New Orleans & Texas Pacific (Southern), and their connections, similar to that filed by the Chesapeake & Ohio, which was mentioned in last week's issue. The rates are made effective as of August 28, whereas the reductions ordered by the Commission from the northern district fields are effective on August 10.

Northwest Board Meeting Held, July 26

Prosperity for agriculture, business and industry in the territory of the Northwest Shippers' Advisory Board was predicted at the meeting of that board at Valley City, N. D., on July 26. The speakers at the meeting included C. T. Jaffray, president of the Minneapolis, St. Paul & Sault Ste. Marie; Charles Donnelly, president of the Northern Pacific, and Harry G. Taylor, former chairman of the Central Western Shippers' Advisory Board, and now manager of the Public Relations section of the American Railway Association, Car Service Division. Mr. Jaffray says that if North Dakota harvests and markets only 75 per cent of the large grain crops now ripening, the state will re-establish itself on a stable basis that will make the coming years prosperous and progressive. He predicted that within five years North Dakota will be in as sound a condition as any state in the union.

Mr. Donnelly stated that the Northern Pacific has prepared intensively to handle the largest small grain crop in 12 years, and that the condition of rolling stock owned by northwest carriers is better than ever before in history.

Lumber Dealers Allege Favoritism

The lumber industry, through the agency of the National Lumber Manufacturers' Association, has submitted to the railroads a memorial requesting them to make an immediate investigation of the rates on substitute building materials in comparison with lumber, with particular reference to the effects of the displacement of lumber and the extent to which such displacement is due to preferential rate advantages. The memorial, submitted pursuant to an understanding reached at a joint meeting in Chicago, July 23, of lumber manufacturers and railroad officers sets forth economic and transportation information with respect to lumber and competitive products, purporting to show an increasing present and prospective loss of thousands of cars of lumber revenue freight and the reasons for this decline in traffic.

Explaining that there is little difference, and often none at all, between rates charged on lumber and certain competing materials, the memorial asserts that in the case of one such substitute, celotex, one car displaces four cars of lumber tonnage. It is

estimated that in the past five years this has cost the railroads over \$5,662,000 in lumber revenue freight and in 1926 alone an estimated loss of \$2,660,000. The lumber industry submits, the memorial continues, that lumber is now bearing more than its full proportion of the transportation burden, with a yearly freight bill of more than \$400,000,000; and that it is now unable to move large volumes of forest products, the market price of which will not permit them to be shipped at present costs of transportation.

"The railroads have indicated their desire to deal justly with those who use their services," the memorial states. "The lumber industry, with the exception of one basic industry, provides the carriers with more cars of revenue freight than any other commodity. We believe that the railroads will desire to correct any existing prejudicial conditions and hope that they will take steps appropriate to that end."

The Gallatin Gateway Inn

The Gallatin Gateway Inn, of the Chicago, Milwaukee & St. Paul, near the northwest corner of Yellowstone National Park, which was opened at the beginning of the present season, was completed in 90 days from the date of breaking ground, though the site was a wilderness and the base of supplies far distant. The hotel is of frame and stucco construction. The roof is of red and buff tile.

It was late in February that the management of the road decided to open the Gallatin Gateway route for passenger business from the main line southward to Yellowstone National Park, but work was begun on the hotel within a week and the building was completed on June 1. It is 250 ft. long by 54 ft. wide.

Gallatin Gateway (formerly Salesville), Mont., is at the terminus of a branch about 40 miles long which leads from the main line of the Milwaukee at Three Forks, Mont., 72 miles east of Butte. The establishment of this branch railroad as an important passenger route necessitated extensive improvement work on the track and roadway.

Kentucky Coal Rate Differential Increased

The present differential of 25 cents a ton in the freight rate on coal from western Kentucky mines over Southern Illinois mines, to the West and Northwest, has been increased to 35 cents, effective October 20, by a decision of the Interstate Commerce Commission in the Illinois-Indiana coal cases, made public August 2. At the same time the commission ordered reductions in the rates on coal to the Chicago switching district from Illinois-Indiana mines, prescribing a rate of \$1.35 per ton from the Danville group in Illinois; \$1.55 from the Brazil-Clinton group in Indiana and \$1.65 from the Lincoln-Sullivan group in Indiana. Commissioners Hall, Lewis and Woodlock dissented from the decision of the majority. Commissioner McManamy dissented in part.

The commission found that the mines in Illinois and Indiana are prejudiced by the unreasonably low rates from the mines in western Kentucky. The evidence indicates, the majority report stated, that 25 cents is too low a spread and that, taking all circumstances into consideration, 35 cents is sufficiently high.

The present relationship between rates from Illinois and Indiana, on the one hand, and the Inner and Outer Crescent districts in Pennsylvania, Maryland, Virginia, West Virginia, eastern Kentucky, and Tennessee, on the other, were found not unduly prejudicial.

The widening of the rate differentials in favor of the Illinois and Indiana mines was opposed by the coal operators of western Kentucky and in the Inner and Outer Crescents. Commissioners Hall and Woodlock, in their separate opinions, dissented to increasing the differential of western Kentucky over southern Illinois, while Commissioners McManamy and Lewis declared that conditions justify an increase in the differential to 50 cents a ton.

Commissioner Lewis also contended that the rates from the Illinois-Indiana mines should be reduced 10 cents a ton.

Equipment and Supplies

Locomotives

THE BOSTON & MAINE, which was inquiring for 25 large engines, has withdrawn its inquiry.

THE CHESAPEAKE & OHIO, which was inquiring for 30 switching locomotives, has withdrawn its inquiry.

THE MISSOURI PACIFIC has replaced its inquiry for 5 Mikado type locomotives with an inquiry for 5 Santa Fe type locomotives.

Passenger Cars

The Great Northern is inquiring for one gas electric car.

THE READING is inquiring for 10 baggage and mail cars.

THE CHESAPEAKE & OHIO has ordered three, 70-ft., all-steel mail and express cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of July 9.

Iron and Steel

THE CHESAPEAKE & OHIO is inquiring for 55,000 tons of rail.

THE NEW YORK, CHICAGO & ST. LOUIS is inquiring for 175 tons of structural steel for bridge work in Indiana.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 300 tons of structural steel for bridge work from the American Bridge Company.

THE LEHIGH VALLEY is in the market for 150 tons of steel to be used in constructing a transfer platform at its yards in Newark, N. J.

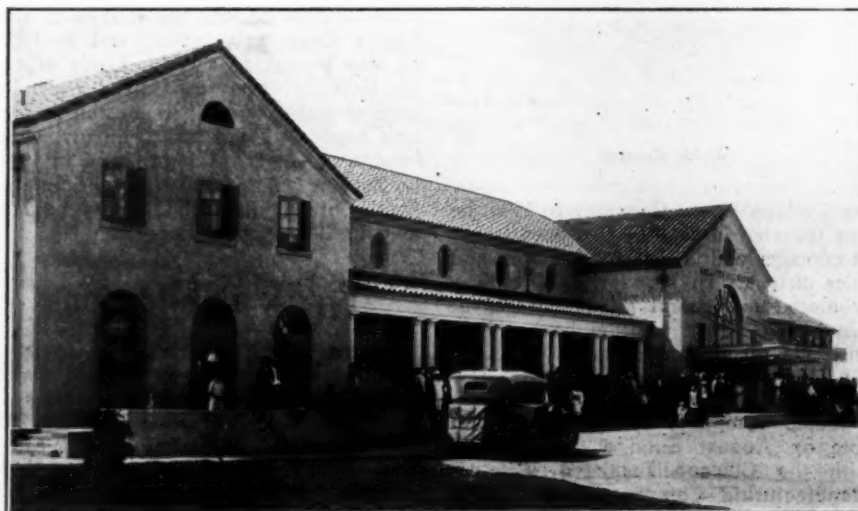
THE PENNSYLVANIA has ordered 2,000 tons of steel from the Bethlehem Steel Company to be used in the electrification work on its line at Chester, Pa.

THE PENNSYLVANIA has ordered 231 tons of steel for a bridge at Philadelphia from the McClintic-Marshall Company and 355 tons of steel for a bridge at Chicago from the same company.

THE NEW YORK, NEW HAVEN & HARTFORD has ordered 330 tons of steel for a boiler plant at Boston from the Boston Bridge Works, and 100 tons of steel for a bridge at Rye, N. Y., from the McClintic-Marshall Company.

Machinery and Tools

THE KANSAS CITY SOUTHERN is inquiring for one 18-in. lathe.



Gallatin Gateway Inn, of the Chicago, Milwaukee & St. Paul

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered one gasoline-driven special locomotive crane from the American Hoist & Derrick Company.

Signaling

THE LONG ISLAND has contracted with the Union Switch & Signal Company for the installation of the coded continuous automatic train stop system between Jamaica, N. Y., and Babylon, 27½ miles, double track. This line is electrically operated and the order includes 250 multiple-unit electric passenger cars and 15 steam and electric locomotives. This section of road is that named in the second order of the Interstate Commerce Commission, and the installation will be an extension of that now in service on the north shore division which was made under the first I. C. C. order.

Pere Marquette to Move Trains by Signal Indication

The Pere Marquette is to equip its line from Hoyt, Mich., near Saginaw, southward to Flint, 35 miles, single track, with signals and other facilities so as to operate trains wholly by signal indication without time-table schedules or train orders, as is done on the Central of Georgia (as recently noted) and in certain other places. A contract has been given to the Union Switch & Signal Company for the necessary materials. The dispatcher's office is at Mt. Morris, seven miles north of Flint, from which all the signals and switches will be operated. The dispatcher will have an illuminated track diagram which will constantly record the position of all trains throughout the entire territory. Besides the two ends of double track there are three passing sidings to be controlled, and these sidings will be fitted to permit the movement of trains into and through them at 30 miles an hour.

The order includes 71 color-light signals, 400 relays, 9 low-voltage switch movements, 29 light type switch indicators and other apparatus.



U. P. Passenger Station at Cheyenne, Wyo.

Bedecked with flags in honor of 50-year service of Vice-President Calvin.

E. G. Dewald, has been appointed representative of the **Dayton-Dowd Company**, Quincy, Ill., with headquarters at Salt Lake City, Utah.

E. R. Pelton, assistant to the manager of the Pacific Northwest branch of the **Truscon Steel Company**, with headquarters at Portland, Ore., has been appointed manager to succeed J. A. Curry, deceased.

William F. Hart, president of the **Verona Tool Works**, with headquarters at Pittsburgh, Pa., has resigned to become connected with the **Bethlehem Steel Company**, Bethlehem, Pa., and has been succeeded by **Walter F. Schleiter**, vice-president of Dilworth, Porter & Co., Inc., with headquarters at Pittsburgh, Pa. **W. W. Glosser**, general sales manager of the Verona Tool Works with headquarters at Verona, Pa., has been appointed vice-president and general manager with headquarters at Pittsburgh.

J. H. Kenney, who has been appointed general manager of the **Cyclone Fence Company**, Waukegan, Ill., entered business as a foreman in the mill of the Cyclone Woven Wire Fence Company at Cleveland, Ohio, on March 1, 1910. When that company was purchased by



J. H. Kenney

the Cyclone Fence Company in 1916, he was transferred to the sales department as manager of the Cleveland factory and sales district. In January, 1924, he was promoted to general sales manager at Waukegan, which position he has held until his recent promotion.

The stockholders of the **Illinois Wire & Cable Company**, Sycamore, Ill., will vote on August 8 on a consolidation with the **Chicago Insulated Wire & Manufacturing Company** of the same city. The new company, which will be known as the **Inland Wire & Cable**

Company, will have a capitalization of 200,000 shares of common stock of \$10 par value, of which not exceeding 105,000 shares will be issued. **George E. Dutton**, president of the Illinois Wire & Cable Company, will be chairman of the board of the new company and **A. B. Gochenor**, president of the Chicago Insulated Wire & Manufacturing Company, will be president of the Inland Wire & Cable Company.

Walter C. Carroll, vice-president of the **Inland Steel Company**, Chicago, who has resigned to become president of the **National Association of Sheet**



Walter C. Carroll

and **Tin Plate Manufacturers**, with headquarters at Pittsburgh, Pa., entered the steel business in the mills of the American Sheet Steel Company in 1902 and was appointed district sales manager for that company in Detroit in the following year. When the American Sheet Steel Company consolidated with the American Sheet & Tin Plate Company in 1904 he was transferred to the Pacific Coast sales office, and in 1906 he was moved to the St. Louis office. In 1908 he was appointed assistant general manager of sales for the American Sheet & Tin Plate Company, with headquarters at Pittsburgh, and in 1921 he became vice-president of the Inland Steel Company, which position he has held until his resignation.

Trade Publications

COFFIN FEEDWATER HEATER SYSTEM.—Instructions for the operation and maintenance of the Coffin feedwater heater system are given in Instruction Book No. 201 issued by the J. S. Coffin, Jr., Company, Trust Company building, Jersey City, N. J. Charts show the diagrammatic arrangement of the feedwater heater system and the method of replacing leaking tubes.

Construction

ALABAMA, TENNESSEE & NORTHERN.—This road has given a contract to the Atlantic Bridge Company, Greensboro, N. C., for construction of piers and steel work of an all-steel bridge on its line at Mobile, Ala.

BALTIMORE & OHIO.—A contract has been let to the Vang Construction Company of Cumberland, Md., for the construction of two water treating plants at Willard, Ohio, and one at Attica Junction, Ohio, to cost about \$39,000.

BALTIMORE & OHIO.—A contract has been let to the Vang Construction Company of Cumberland, Md., for the construction of a pier at Lawrenceville, Ill., which will cost \$35,000.

BESSEMER & LAKE ERIE.—This road has awarded a contract to the Milliron Construction Company, Dubois, Pa., for a reinforced concrete overhead highway bridge at Shermansville, Pa., to cost \$118,564.

CHESAPEAKE & OHIO.—This road proposes to construct a drainage system under its crossing on East Main street, Lexington, Ky., and to rebuild the crossing itself.

CHESAPEAKE & OHIO.—In connection with this road's plans for improvements at Covington, Ky., and Cincinnati, O., a contract has been awarded to E. A. Whitney & Sons, Kansas City, Mo., for casting and driving pre-cast concrete piles for the bridge over the Ohio river between these two points. This is a sub-contract let by the U. G. I. Contracting Company which has the original contract for the bridge work. All sub-contracts have not yet been let.

CHICAGO, BURLINGTON & QUINCY.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for the construction and installation of a two-track standard "N & W" type electric cinder handling plant at Brookfield, Mo. The same contractor will construct and install a one-track "N & W" type electric cinder handling plant for this railroad at Quincy, Ill.

CHICAGO, BURLINGTON & QUINCY.—A contract has been let to the Brush Lumber Company, Brush, Colo., for the construction of a one-story brick and stucco combined passenger and freight station at Brush to cost about \$25,000. A contract for the construction of a storage and oil house at Sheridan, Wyo., has been let to J. E. Colwell, Denver, Colo. The cost of this structure will be about \$35,000.

CHICAGO, BURLINGTON & QUINCY.—This company will bear two-thirds of the cost of the construction of a reinforced concrete and steel highway subway under its tracks at Forty-Fourth and Washington streets, Denver, Colo. The total cost of the structure will be about \$100,000.

CHICAGO, MILWAUKEE & ST. PAUL.—Company forces are being employed in the

construction of three minor shop buildings at Tomah, Wis., which will have outside dimensions of 20 ft. by 80 ft., 40 ft. by 60 ft. and 40 ft. by 80 ft. respectively.

CHICAGO, ROCK ISLAND & PACIFIC.—The city of Amarillo, Tex., has prepared plans for the construction of a viaduct over the tracks of this company at West Eighth street and of subways under the tracks at Fillmore or Buchanan street and at West Third or West Fourth street.

DELAWARE, LACKAWANNA & WESTERN.—This road is asking for bids, to be in August 15, on a railroad Y. M. C. A. building at Elmira, N. Y. It is to be a three-story structure and will cost around \$75,000.

DENVER & RIO GRANDE WESTERN.—A contract has been awarded to Arthur & Allen, Pueblo, Colo., for the grading in connection with the construction of two industrial spurs at Loma, Colo., totaling 3 miles of line.

ERIE.—This road has let a contract to Bates & Rogers Construction Company of Chicago for the elimination of a grade crossing at Buffalo street, Jamestown, N. Y. This is in addition to the program of grade crossing elimination work at that point which was recently completed by Arthur McMullen & Co.

INTERNATIONAL GREAT NORTHERN.—A contract for the construction of a simple automatic electric coaling station, designed to handle lignite coal at Trinity, Tex., has been awarded to the Roberts & Schaefer Company, Chicago.

MISSOURI PACIFIC.—A contract for the construction of a 500,000-bu. addition to a grain elevator at Omaha, Neb., has been awarded to the Folwell-Ahlskog Company, Chicago. The addition, which will require an expenditure of about \$500,000, will be constructed of reinforced concrete and steel and will be operated by the Nye and Jenks Grain Company, Omaha, in connection with the present M. P. elevator at Omaha.

LEHIGH VALLEY.—This road has let a contract for dredging and filling work in connection with the new Lehigh Valley-Pennsylvania bridge over Newark Bay to the Gahagan Company of Brooklyn, N. Y.

LEHIGH VALLEY.—This road has prepared plans for the construction of a transfer platform at its yards in Newark, N. J.

MISSOURI-KANSAS-TEXAS.—A contract for the construction of a freight station at Houston, Tex., has been awarded to T. H. Johnson, Sedalia, Mo., at a cost of about \$250,000. The contract for the trackage facilities, will be let later. The station will be located on a 15-acre site recently acquired by the M.-K.-T. on Gabel street between Magnolia and Maple streets. Plans for the project call for a station which will be served by 14 tracks, 10 of which will be constructed at the present time.

NEW YORK CENTRAL.—This road has let a contract to Arthur McMullen & Co., of New York for the laying of electric ducts in connection with improvements along its west side line in New York. The cost of the work involved amounts to about \$200,000.

NEW YORK CENTRAL.—This road has let a contract to James Stewart & Co., Inc., of New York, for the construction of two public roadways and two public passageways through the new office building to be constructed at Park avenue & 45th street. Edward J. Duffy Co., Inc., of Weehawken, N. J., has been awarded a contract for masonry excavation, and for concrete structural work for providing supports for a turbine generator in the power house at Yonkers, N. Y. A contract has been let to the Frederick Snare Corporation, of New York, for the construction of an additional intake for power station at Port Morris, N. Y. A contract has also been let to the Railway Engineering and Construction Company of Boston, for the construction of culverts in connection with double tracking at Falls Road, Eagle Harbor, Middleport and Lockport. A contract has been let to M. F. Kelly Building Corporation, of New York, for the demolition and removal of buildings and structures between West 59th and West 60th streets and grading to sub-grade for tracks and driveways in New York.

NEW YORK, NEW HAVEN & HARTFORD.—This road has given a contract to the Mc Clintic-Marshall Company, of Pittsburgh, Pa., for the construction of a bridge on its line at Rye, N. Y.

PACIFIC GREAT EASTERN.—A contract for the construction of the substructure of a bridge over Cheakamus Canyon, near Cheakamus, B. C., has been awarded to Stewart & Barber, Vancouver, B. C., at a cost of about \$25,000. A contract for the construction of the substructures for bridges at three points near Squamish, B. C., and for the construction of a concrete arch bridge near Squamish has been let to Dawson, Wade & Co., Vancouver, B. C., at a cost of \$20,000.

PANHANDLE & SANTA FE.—A contract has been let to the Sharp and Fellows Contracting Company, Los Angeles, Cal., for the construction of a line from White-deer, Tex., northwest 11 miles. The remaining 10 miles of the 21 miles of line for which authorization was recently received from the Interstate Commerce Commission will be constructed at some future date. A contract has been let for the construction of a six-stall concrete addition to the engine house located at Slaton, Tex.

PENNSYLVANIA.—A contract has been awarded to the Minton Scobel Company of Cleveland, Ohio, for the construction of a freight house at Cleveland which will cost around \$150,000.

PENNSYLVANIA.—This company has given a contract to the McClintic-Marshall Company of Pittsburgh, Pa., for the construction of two bridges on its line, one at Chicago and one at Philadelphia.

READING.—This road plans to build a bridge on its line at Sellersville, Pa.

ST. LOUIS-SAN FRANCISCO.—A contract for the construction of a 400-ton reinforced concrete simplex automatic electric coaling station at Yale, Tenn., has been let to the Roberts & Schaefer Company, Chicago.

ST. LOUIS SOUTHWESTERN.—A contract has been awarded to Bunnell and Mack, Paragould, Ark., for the construction of a timber highway viaduct across the tracks of this railroad near Jonesboro, Ark., and for the construction of embankments along a waterway at a number of points between St. Francis, Ark., and Campbell.

SOUTHERN.—A contract has been awarded to J. P. Pettyjohn & Co., of Lynchburg, Va., for the construction of a freight station at Asheville, N. C., which will cost \$60,000.

SOUTHERN.—This road plans the construction of an overhead bridge across its tracks at Spencer, N. C., to connect Spencer and East Spencer. It is also preparing plans for the erection of a freight terminal at Greenville, S. C.

STATE OF OHIO.—The state highway director, George F. Schlesinger, has set dates between August 2 and August 9 for the hearing of objections to the elimination of highway and railroad grade crossings at the following points with various railroads involved: Near Worthington on the Pennsylvania and the Cleveland, Cincinnati, Chicago & St. Louis; at Newcomers-town on the Pennsylvania; near Zoarville on the Wheeling & Lake Erie; at Perrysville on the Pennsylvania; south of Lima on the Baltimore & Ohio; at Avery on the New York Central; at Scott's Crossing on the Pennsylvania; and at Sunbury on the Pennsylvania. A program of 33 grade crossing eliminations planned for completion before December, 1928, has been made possible through the passage of a gasoline tax law by the general assembly. Each railroad involved will bear 50 per cent of the cost, the state and the county sharing the remaining 50 per cent.



On the B. & A. Near Russell, Mass.

Financial

CHICAGO, ROCK ISLAND & PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon that part of its Newton-Monroe branch from Reasnor to Monroe, 7 miles, in Jasper County, Iowa, due to lack of traffic.

CISCO & NORTHEASTERN.—*Notes.*—This company has applied to the Interstate Commerce Commission for authority to issue and deliver to the Texas & Pacific Railway \$1,273,230 of 6 per cent demand promissory notes, from time to time, against advances to a like amount. The funds will be used to carry forward construction of an extension from Breckenridge, Tex., to Throckmorton, until permanent arrangements are made for the financing of the project.

CLINTON & OKLAHOMA WESTERN OF TEXAS.—*Incorporation.*—Articles of incorporation for this company, which plans the construction of a line between Cheyenne, Okla., and Pampa, Tex., 194 miles, have been approved by the attorney general's department of Texas. The amount of the capital stock is \$100,000.

DELAWARE VALLEY.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$45,000 of 6 per cent bonds, to be used in exchange for an issue of \$90,000 of 5 per cent first mortgage bonds to be surrendered at a 70 per cent discount, leaving a balance of \$18,000 for the purchase of an engine and necessary repairs to tracks, etc.

GENERAL AMERICAN TANK CAR CORPORATION.—*Equipment Trust.*—Drexel & Co. and Charles D. Barney & Co. have offered \$3,710,000 4½ per cent equipment trust securities, series 19, at prices to yield 5 per cent. The equipment includes 200 new insulated tank cars, 150 new refrigerator express cars, 50 new milk refrigerator cars, 100 new freight refrigerator cars and 1,780 used tank cars, having a total estimated value of \$5,330,000.

INTERNATIONAL - GREAT NORTHERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and pledge \$2,090,000 of its first mortgage 5 per cent gold bonds, to reimburse the treasury for expenditures from income.

KANSAS, OKLAHOMA & GULF.—*Equipment Note.*—This company has been authorized by the Interstate Commerce Commission to issue to the Central National Bank, of Philadelphia, a 5 per cent promissory note for \$246,000, representing part of the purchase price of five Santa Fe-type locomotives, to cost \$329,500. Applicant will pay the remainder in cash. The note will be dated September 1 next and will mature September 1, 1932. Applicant proposes to make quarterly payments of \$12,300 commencing December 1 to repay the loan.

MARIANNA & BLOUNTSTOWN.—*Acquisitions.*—The Interstate Commerce Commission has issued a certificate authorizing this company to acquire and operate a line from Blountstown, Calhoun County, Fla., to Scotts Ferry, 14 miles, formerly owned by the Blountstown Manufacturing Company. The line is at present being operated by the railway under a trackage agreement.

MINNEAPOLIS & ST. LOUIS.—*Receiver's Certificates.*—The Interstate Commerce Commission has authorized the issuance of \$200,000 receiver's certificates to renew or refund a like amount maturing August 3.

NEW ORLEANS, TEXAS & MEXICO.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and pledge \$6,668,000 of first mortgage 5 per cent gold bonds, to reimburse the treasury for expenditures from income.

NEW YORK, CHICAGO & ST. LOUIS.—*6 Per Cent Dividends.*—Directors have declared a quarterly dividend of 1½ per cent on the common stock payable October 1 to stockholders of record of August 15. This has the effect of putting the common stock on a 6 per cent dividend basis such as the company paid from July, 1923, to January, 1926. This is the first cash dividend since the organization of the Chesapeake Corporation last May, to which company the New York, Chicago & St. Louis turned over its holdings of Chesapeake & Ohio common stock and the majority of stock of which was distributed to common stockholders of the New York, Chicago & St. Louis. From July, 1926, the regular rate on the Nickel Plate common shares was 11 per cent.

NEW YORK, NEW HAVEN & HARTFORD.—*Preferred Stock Issue.*—This company has filed its application to the Interstate Commerce Commission for authority to issue \$49,036,700 of 7 per cent cumulative preferred stock, convertible into common stock, and from time to time to issue common stock in exchange, the proceeds to be used to discharge its note for \$43,000,000 to the Director-General of Railroads payable on October 31, 1930, and a portion of the balance of the company's total indebtedness of \$87,030,000 to the government. The company has entered into an agreement with J. P. Morgan & Co. to underwrite the entire amount for a compensation of 2 per cent, subject to the commission's approval.

PENNSYLVANIA.—*Bonds.*—The Pittsburgh, Youngstown & Ashtabula has applied to the Interstate Commerce Commission for authority to issue and deliver to the Pennsylvania \$2,981,000 of first general mortgage 4½ per cent bonds, in payment of indebtedness for expenditures by the Pennsylvania. The Pennsylvania also applied for authority to assume, as lessee, obligation and liability in respect of the bonds.

QUANAH, ACME & PACIFIC.—*Stock Authorized.*—The Interstate Commerce Commission has authorized this company to issue \$50,000 capital stock to be sold to the St. Louis-San Francisco which owns

all of the present outstanding capital stock. The sale is to be at par and the proceeds are to be used to assist the carrier to complete an extension from McBain, Tex., to Floydada, 28 miles, previously authorized.

ST. LOUIS-SAN FRANCISCO.—Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue and pledge as collateral for short-term notes \$3,911,000 of its prior lien mortgage 5 per cent bonds, series B. The bonds and their proceeds will be used to reimburse the company for uncanceled expenditures from income for acquiring \$1,861,000 of the capital stock of the Muscle Shoals, Birmingham & Pensacola Railroad and \$2,050,000 for additions and betterments during 1926. The Muscle Shoals company has requested authorization to issue and deliver the stock in question to the Frisco, as consideration for additions and betterments to its property. The St. Louis, San Francisco & Texas has applied for authority to issue and deliver to the Frisco \$38,301 of 6 per cent demand promissory notes to reimburse the latter for additions and betterments. Other subsidiaries also have requested authority to issue and deliver to the Frisco their 6 per cent demand promissory notes to reimburse it for expenditures, as follows: Kansas City, Memphis & Birmingham, \$357,962; Kansas City, Fort Scott & Memphis, \$166,658; Birmingham Belt, \$105,399; and Fort Worth & Rio Grande, \$21,458.

ST. JOHNSBURY & LAKE CHAMPLAIN.—Lease Continued.—The Maine Central, which announced on May 25 that it would cancel its lease of that portion of the St. Johnsbury & Lake Champlain between Lunenburg, Vt., and St. Johnsbury, effective August 1, announced under date of July 29 that a new lease has been arranged and that operation by the Maine Central would continue as heretofore. It had been reported a few days previous that the Canadian Pacific had effected a lease of the line in question, which report, apparently, was incorrect.

VIRGINIAN. — Pennsylvania Reported Seeking Control.—Dispatches from Norfolk, Va., report that General W. W. Atterbury, president of the Pennsylvania, and other Pennsylvania officers have been conferring with Norfolk city officers with a view to having the latter favor the linking of the Virginian with the Pennsylvania.

Average Price of Stocks and Bonds

	Aug. 2	Last week	Last year
Average price of 20 representative railway stocks..	121.26	117.94	98.40
Average price of 20 representative railway bonds..	94.44	94.09	90.80

Valuation Reports

The Interstate Commerce Commission has issued valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

Tentative Reports

Chicago Heights Terminal Transfer	\$845,000	1919
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Final Reports

Reynoldsville & Falls Creek..	\$431,311	1917
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Railway Officers

Executive

J. W. Smith, general manager of the Indiana Harbor Belt, with headquarters at Gibson, Ind., has resigned, effective August 10, to become assistant to the president of the Boston & Maine, with headquarters at Boston, Mass.

Following the acquisition of control of the Chicago Heights Terminal Transfer by the Chicago & Eastern Illinois the jurisdiction of **T. C. Powell**, president of the C. & E. I., **F. G. Nicholson**, vice-president and general manager, **F. R. Austin**, comptroller, **J. P. Reeves**, treasurer, and **C. A. Burget**, secretary, all with headquarters at Chicago, has been extended to cover the Chicago Heights Terminal Transfer.

Financial, Legal and Accounting

John G. Wormick has been appointed assistant auditor of disbursements of the Reading, with headquarters at Philadelphia, Pa.

J. H. Bradbury has retired as comptroller of the Colorado & Southern, the Ft. Worth & Denver City and the Wichita Valley, with headquarters at Denver, Colo., and the jurisdiction of **H. W. Johnson**, comptroller of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been extended to include those three railroads.

Operating

W. O. Uffelman has been appointed trainmaster of the Tennessee Central, with headquarters at Nashville, Tenn., succeeding **T. W. Burke**, deceased.

O. E. Coyne, superintendent of the Missouri Pacific, has been appointed trainmaster of the River, Independence, Lexington and Bagnell districts, with headquarters at Jefferson City, Mo., succeeding **E. B. Stevenson**, who has been appointed trainmaster of the McGehee, Hamburg and Warren districts and McGehee yard, with headquarters at McGehee, Ark. He succeeds **L. F. Ginochio**, who has been appointed trainmaster of the Lake Providence, Arkansas City and Eudora districts, with headquarters at McGehee, Ark. Mr. Ginochio succeeds **G. W. Griffing**, who has been appointed trainmaster of all districts, with headquarters at McGehee.

J. O. Bell, superintendent of the Chicago division of the Chicago & Eastern Illinois, with headquarters at Danville, Ill., has been appointed superintendent of transportation, with headquarters at Chicago, succeeding **C. B. Anderson**, who has been assigned to other duties. **P. S. Sampson**, superintendent of the Illinois-St. Louis division, with head-

quarters at Salem, Ill., has been transferred to the Chicago division, succeeding Mr. Bell. The mileage of the Evansville division has been included in the Chicago division and **E. R. Glidden**, superintendent of the Evansville division, with headquarters at Evansville, Ind., has been transferred to the Illinois-St. Louis division, with headquarters at Salem, succeeding Mr. Sampson.

F. S. Weisbrook, who has been appointed general manager of the Davenport, Rock Island & North Western, with headquarters at Davenport, Iowa, was born in September, 1877, at Ft. Madison, Iowa. After completing a two-year course in a business college he entered railway service in April, 1900, as a helper on bridge construction on the D. R. I. & N. W. The following month he became a chainman on location surveys, being placed in charge of construction and material checking later in the year.



F. S. Weisbrook

In April, 1901, Mr. Weisbrook entered the office of the chief engineer as an accountant on the pay roll distribution of labor charges, where he remained until 1905 when he was appointed purchasing agent. Five years later he became chief clerk to the general manager where he remained until 1917 when he was promoted to engineer of maintenance of way and structures. Mr. Weisbrook was appointed acting general manager in February, 1927, remaining in that capacity provisionally until his full appointment as general manager on June 1.

Traffic

T. B. Collett has been appointed traveling freight agent of the Norfolk & Western, with headquarters at Roanoke, Va.

James Finlay has been appointed assistant general freight agent in charge of industrial development, on the Michigan Central. **Alfred E. Sauer** has been appointed division freight agent, succeed-

ing **Norbert J. Brennan**, appointed assistant general freight agent in charge of coal, coke and ore traffic. All have headquarters at Detroit, Mich.

P. S. Lottinville, general agent for the Chicago & Eastern Illinois at Chicago Heights, Ill., has also been appointed general agent for the Chicago Heights Terminal Transfer, a newly created position.

R. D. Williams, assistant general freight agent of the Missouri-Kansas-Texas, with headquarters at St. Louis, Mo., has resigned to become a member of the Rate committee of the Southwestern Freight Bureau, with headquarters in the same city.

E. F. Adams, assistant general passenger agent of the Gulf, Colorado & Santa Fe, with headquarters at Galveston, Tex., has been promoted to general passenger agent, with headquarters at the same point, succeeding **W. S. Keenan**, deceased.

J. H. Day, general freight agent of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been appointed acting freight traffic manager in charge of legislation and tariff matters, with headquarters at the same point, in place of **Edwin Kluever**, who has been granted a leave of absence because of illness. **R. A. Williamson**, assistant general freight agent, with headquarters at Cleveland, has been appointed acting general freight agent, with headquarters at the same point. **H. L. Baird** has been appointed assistant general freight agent, with headquarters at Cleveland.

Harold K. Faye, freight traffic manager of the Western Pacific, with headquarters at San Francisco, Cal., has also been appointed freight traffic manager of the Sacramento Northern and the Tidewater Southern. **R. D. Williams**, traffic manager of the Sacramento Northern, with headquarters at Sacramento, Cal., has been appointed assistant freight traffic manager of the Western Pacific, the Sacramento Northern and the Tidewater Southern. **J. D. Mansfield**, general freight agent of the Western Pacific, with headquarters at San Francisco, has also been appointed general freight agent of the Sacramento Northern and the Tidewater Southern. **John F. Bon** and **W. J. Shotwell**, assistant general freight agents of the Western Pacific, with headquarters at San Francisco, have also been appointed assistant general freight agents of the Sacramento Northern and the Tidewater Southern. **B. F. Nevins**, general livestock agent of the Western Pacific, with headquarters at San Francisco, has also been appointed general livestock agent of the Sacramento Northern and the Tidewater Southern.

Mechanical

E. J. Wegmiller, master mechanic of the Evansville division of the Chicago & Eastern Illinois, with headquarters at

Evansville, Ind., has been transferred to the Illinois-St. Louis division, with headquarters at Salem, Ill., succeeding **A. W. Standiford**, who has been transferred to the Chicago division, with headquarters at Danville, Ill.

R. A. Whitsitt, assistant master mechanic of the Tennessee Central, has been appointed master mechanic, succeeding **E. L. Mauk**, deceased. The position of assistant master mechanic has been abolished. **T. A. Saunders**, general foreman, car department, has been appointed master car builder, all with headquarters at Nashville, Tenn.

Engineering, Maintenance of Way and Signaling

J. S. Hagan has been appointed electrical engineer of the Central of New Jersey, with headquarters at the Elizabethport shops, Elizabeth, N. J.

A. P. Gardner, division engineer on the Western division of the Wabash, with headquarters at Moberly, Mo., has been appointed engineer of maintenance of way of the Ann Arbor, with headquarters at Owosso, Mich.

Obituary

Gus Hoover, general agent in the passenger department of the St. Louis Southwestern, with headquarters at Waco, Tex., died at Dallas, Tex., on July 26 following an operation.

Charles L. Stone, who retired as passenger traffic manager of the Missouri Pacific in July, 1926, after serving for 19 years in that capacity, died at New York on August 1 following an illness of about a year.

Benjamin Franklin Bush, former president of the Western Maryland, the Western Pacific, the Denver & Rio Grande and the Missouri Pacific, who retired from active railway life in 1924 as chairman of the board of directors of the latter railroad, died on July 29 at St. Luke's Hospital, St. Louis, Mo. Death, which followed an illness of several months, was due to cerebral arteriosclerosis. Mr. Bush was born on July 5, 1860, at Wellsboro, Pa., and after completing a course in the State Normal School at Mansfield, Pa., he entered railway service in 1882 as a rodman on the Northern Pacific. He advanced from rodman to locating engineer and division engineer and in 1887 he was appointed division engineer on the Union Pacific. Two years later he became chief engineer and general superintendent of the Oregon Improvement Company, Seattle, Wash., serving as general manager for the Northwestern Improvement Company, Roslyn, Wash., controlling coal properties of the Northern Pacific, from 1896 to 1903. After four years as fuel agent for the Missouri Pacific, Mr. Bush was elected president of the Western Maryland in 1907, serving as receiver and again as president until

May 1, 1911, when he was elected president of the Missouri Pacific and the St. Louis, Iron Mountain & Southern. Mr. Bush also acted as president of the Denver & Rio Grande from January, 1912, to November, 1915, and as president of the Western Pacific from July, 1913, to November, 1915. When the M. P. and the St. L., I. M. & S. were placed in receivership in August, 1915, Mr. Bush was appointed receiver, being



B. F. Bush

elected president when the two railroads were reorganized and merged as the Missouri Pacific in June, 1917. From June, 1918, to March, 1920, he served as regional director of the Southwestern region of the United States Railroad Administration. He retired as chairman of the board of directors of the Missouri Pacific in June, 1924, although he remained a director until his death. Since his retirement he had been engaged in the banking and farming business near St. Louis. A resume of his work as president of the M. P. appeared in the *Railway Age* of March 31, 1923.

THE CAR DEPARTMENT of the Chicago & North Western established a record for the system during June when only six reportable injuries occurred among the 5,537 employees of the department. These employees worked 1,240,288 hours during that period.

THE CHICAGO, ROCK ISLAND & PACIFIC has shortened the running time of its Rocky Mountain Limited, operating between Chicago and Colorado Springs and Denver, and the Colorado Flyer, operating between Colorado Springs and Denver and St. Louis. The Rocky Mountain Limited will leave Chicago at 10 a. m. as at present and will arrive in Colorado Springs at 12:35 p. m. instead of 2:45 p. m., and Denver at 1:10 p. m. instead of 3 p. m. Returning, it will leave both Denver and Colorado Springs at 11 a. m. instead of Denver at 10:25 a. m. and Colorado Springs at 10:20 a. m., and will arrive in Chicago at 4:15 as at present. The Colorado Flyer will leave Colorado Springs at 3:05 p. m. instead of 2:10 as at present, Denver at 2:15 as at present, and will arrive in St. Louis at 4:30 p. m. instead of 5:25 p. m.